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JUN 11 1931

STEEL

For forty-eight years—IRON TRADE REVIEW

June 11, 1931

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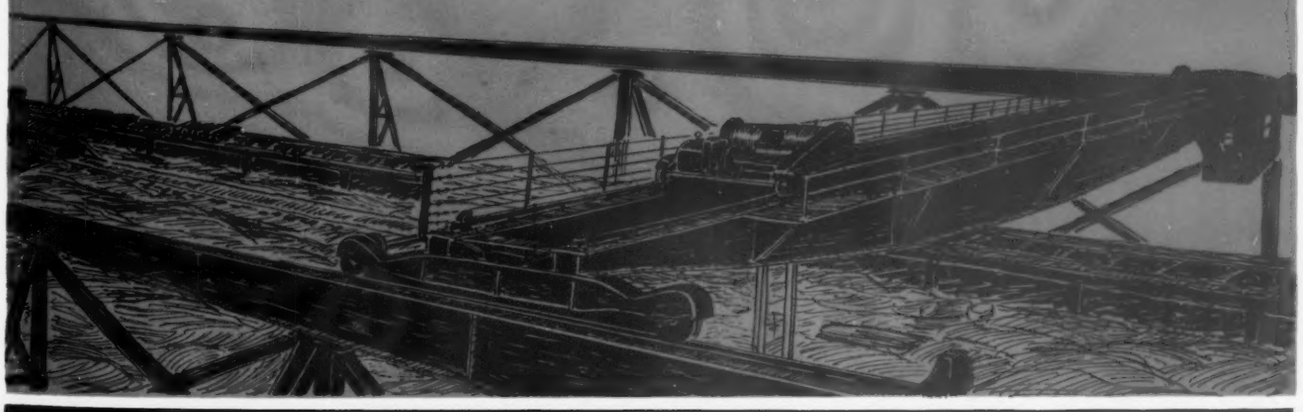

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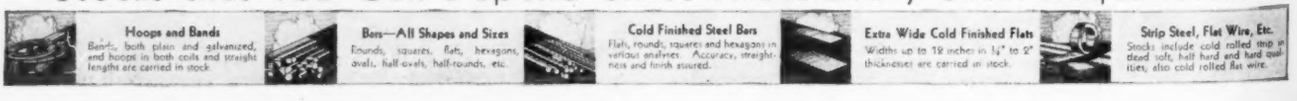
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Volume 88 Number 24

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

WESTWARD the course of empire—and of pig iron—takes its way. Pittsburgh-Youngstown-Wheeling-Cleveland producers still are dominant in the pig iron industry, but on the western horizon Chicago district furnaces are sending up a smudge which threatens to blot out this supremacy. Charting pig iron production for three decades reveals clearly (Page 15) that the trend line of the middle-eastern states is declining gently while that of Illinois-Indiana-Michigan is ascending gradually. Converging lines ultimately meet, and if the experience of 30 years is a trustworthy guide, Chicago will attain parity with its eastern competitors about 1970, provided—always provided—the interior furnaces continue to be rationed on lake iron ore.

Alien Ore, Foe or Friend of Lake Ore?

Through this loophole enter a number of variables. Only time will reveal its full significance, but foreign iron ore already is being floated to the Great Lakes region, three cargoes of low phos ore from North Africa (Page 15) being on their way to Port Colborne, Ont. With a St. Lawrence seaway apparently assured, will rich 60 per cent foreign ore, entirely water borne, menace Lake Superior ores, now analyzing scarcely more than 50 per cent? Will foreign competition serve as a prod to beneficiation and release tremendous reserves of low-grade ore at the head of the Great Lakes? Chicago would be closer to this beneficiated ore than any Lake Erie port, but Toledo is 750 miles nearer by water to the sources of foreign ore.

Labor's Moods Vary with Industries

In labor matters, which are growing in importance, the variables also complicate . . . .More coal miners in West Virginia and western Pennsylvania are on strike against low wages (Page 18), although the total is not impressive . . . . On the other hand, unorganized sheet mill workmen at Mansfield, O., who three weeks ago struck, successfully, against a wage reduction of 15 per cent, have volunteered (Page 19) to take a cut of 5 per cent as their contribution toward lessening the rigors of a receivership . . . . Studying changes in wage rates since last December, the department of labor finds (Page 19) reductions outnumber increases 933 to 39. . . . The supply of labor is diminishing (Page 18), on the basis of immigration in April being less than one-sixth that of last April.

Steel Hurdling Canada's Tariff Barrier

But labor is no more divided in its counsels on wages than is business upon the tariff. . . . Just

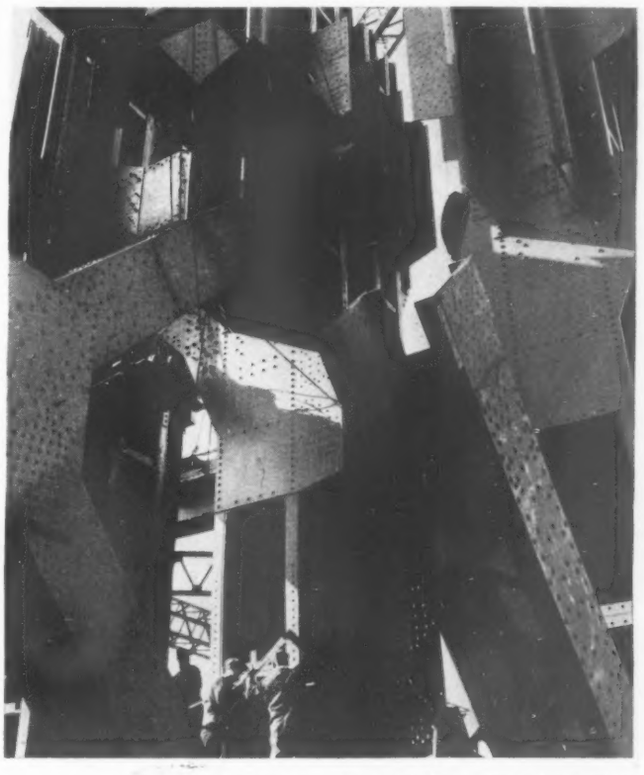


Photo Courtesy Port of New York Authority

Irresistible brute strength, mass, stability, permanence—such does this panel of the New Jersey tower of the Hudson river bridge, now designated the George Washington bridge, connote

when opponents of the tariff begin to make a convincing showing that trade barriers have intensified the depression, along comes Canada, encouraged by the first increase in her tariff, to make a second (Page 17). For steel, the increases are not great; in fact, some rates have been lowered, but the tendency is toward building up a home industry, which is Premier Bennett's goal. . . . It is of little comfort to domestic producers of copper to have a senator forecast (Page 18) that the next congress will not raise their duty.

No Hara-kiri for Japanese Rail Mills

Japan has become most energetic in the attempt to improve her balance of trade. Not content with exporting enameled ware, to the discomfiture of German manufacturers, Nippon now is invading (Page 93) the rail markets of the Far East. Japanese mills sought entrance to the exclusive International Rail Makers' association but were blackballed for demanding too extravagant a quota; now they are going after business in their own way . . . . While rails upset foreign markets, the Pennsylvania railroad at home proceeds (Page 16) to lay the heaviest section—152 pounds to the yard—yet laid in main track in the United States.

Higher Freight Rates, Higher Mill Rates

From the practical standpoint, these 152-pound rails will permit faster passenger and heavier freight trains, but even at $43 per ton, at which 130-pound and lighter sections are priced, it will cost more per mile to lay them. To bolster their revenue to the point where, among other things, they can improve their track and equipment, the railroads are preparing (Page 16) to ask the interstate commerce commission for a 15 per cent increase in freight rates. . . . In New England the scrap trade is asking for lower freight rates (Page 16) but offers reciprocity in the form of larger carload minimums. . . . A more prosperous railroad plant is certain to benefit the drop forge industry, which is prompted by its over-capacity to initiate (Page 49) a survey to disclose new opportunities.

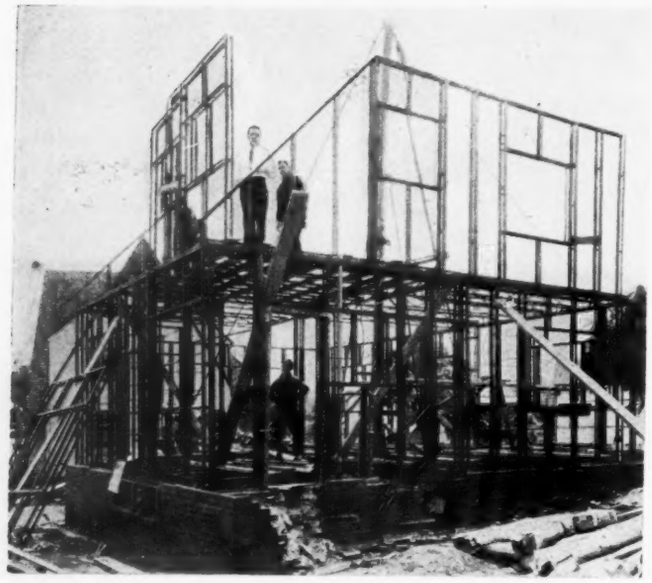


Photo Courtesy General Electric Co.

This 2-story 6-room dwelling, 32 x 26 feet, with basement garage extension, is being erected with arc welded steel panels at Mamaroneck, N. Y.

Transportation Key to Summer Output

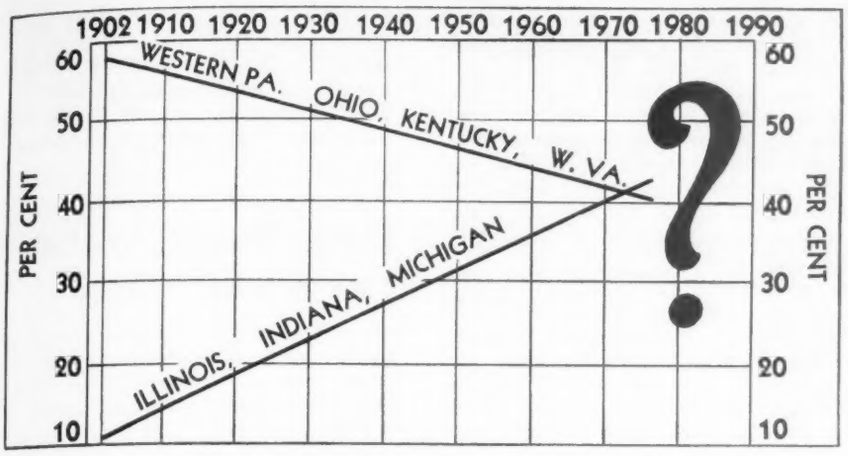
Building requirements for steel are uncommonly large for the season, this week's awards (Page 70) at 62,000 tons being the highest since early April, and pipe line and general manufacturing needs appear almost at bedrock, but declining demand from the railroads and the automotive industry are dragging production down. . . . By a coincidence, German (Page 93) and American steel mills this week are operating at 40 per cent. . . . This is a decline of 5 points from the general level of May (Page 21) when the industry averaged 45 per cent. . . . But even a 40 per cent steel rate cannot cloud Gary's celebration (Page 19) of its 25th anniversary.

How Control Heat, Yet Not Vitiate It?

Unremunerative selling prices for steel render any reduction in conversion costs the more attractive, hence the trend toward applying the recuperative principle to soaking pit operation. Several advantages accrue from one-way firing (Page 44), with automatic control being developed on a commercial scale for blast furnace and open-hearth steel practice. . . . Electrically-fired heat-treating furnaces boast longer life because of the absence of flames which erode outer surfaces. In a recently designed unit for treating high-temperature salt baths, metal can be annealed (Page 50) in a few minutes to such a low hardness that from 10 to 20 per cent less power is required later for the drawing operation.

Volts Running Horsepower Out of Mills

Electricity was first used in the steel industry in 1891, just 40 years ago, but electrification really began in 1905. Since then some 1900 drives have been installed, the total horsepower aggregating 2,550,000. New drives in 1930 numbered 109 involving 158,440 horsepower; in 1929, the best year in history, 201 drives were installed totaling 313,000 horsepower. (Page 31). . . .Several hundred engineers interested in electrical problems of the steel industry are preparing to meet in Cleveland next week for the twenty-seventh annual convention and exposition of the Association of Iron and Steel Electrical Engineers. More than 125 manufacturers of equipment used in the steel industry will be represented in the show. (Page 38).



WHEN will these lines cross? Illinois, Indiana and Michigan's percentage of pig iron output in the United States continues to climb, as shown by the lower line. Western Pennsylvania, Ohio, Kentucky and West Virginia's proportion moves downward—upper line. Projected, these lines should cross about 1972. Diminishing lake iron ore reserves inject a doubtful factor. Long before 1972 large tonnages of foreign iron ore will be imported to the Great Lakes—the first few cargoes now are on their way. And Chicago is 750 to 800 miles west of Lake Erie by water

Pig Iron Output Trends Persistently Toward West

PRODUCTION of pig iron and ferroalloys in the United States continues to show a slow but steady shift toward the Chicago district. Recent tabulations of the 1930 output by states indicate a further moderate reduction in the percentage manufactured in the central states—western Pennsylvania, Ohio, Kentucky and Virginia—and another slight gain for Illinois, Indiana and Michigan.

The central group still accounts for more than 50 per cent, but the furnaces in the three states farther west have increased their proportion to nearly 25 per cent, leaving little more than 25 per cent for all of the states outside of these seven.

Though the average annual losses and gains for the two leading districts appear of small consequence, the persistence of the two opposite trends over a period of years makes them loom up with more significance. For example, in the last 28 years the central states have been reduced from 57.65 per cent of the total production to 51.09 per cent, an average annual loss of little more than 0.14 points. In the same time, output in Illinois, Indiana and Michigan has climbed from 10.58 per cent to 22.92, the average annual gain in this instance amounting to slightly more than 0.41 points.

One of the most illuminating features of the accompanying table, compiled by W. L. Tinker, secretary, Lake Superior Iron Ore association, Cleveland, is the comparison it affords between 1930 and 1913. Production of pig iron and ferroalloys in 1930, according to the American Iron and Steel institute, was 31,752,169 gross tons. This was only 786,017 tons more than the 30,966,152 tons made in the prewar year. The two years offer a fairly close tonnage basis for comparison.

Here is what developed: The central group lost 6.09 points. The eastern states, comprising eastern Pennsylvania, Maryland, Maine, Massachusetts and Connecticut went down 0.56 points; New York and New Jersey, down 0.6 points; Wisconsin and Minnesota, down 0.33; and Virginia, 0.8.

Illinois, Indiana and Michigan moved up 7.73 points; southern states gained 0.02, and western states, 0.63.

As only fractional changes occurred in the southern and western states, practically all that was lost by the eastern states was absorbed by the increase in Illinois, Indiana and Michigan. The average annual increment for these three states in the 17-year period was 0.45 points; the annual loss for the central group, 0.36.

In 1929, the year of record production, this latter group produced 53.54 per cent of the total, and in 1930, 51.09 per cent. Between the same years the Tri-State furnaces increased their proportion from 22.16 to 22.92. The eastern states, Virginia, southern states, and western states made fractional gains; a slight loss is shown for New York and New Jersey.

Foreign Iron Ore Coming To Lakes for First Time

Foreign iron ore is being imported to the Great Lakes for the first time,

Proportionate Pig Iron Production by States

(Total Output of Pig Iron and Ferroalloys, and Percentages for Groups)

Year	Gross Tons	East Pa., Md., Me., Mass., Conn.	New York, New Jersey	West Pa., Ky., W. Va. Ohio	Ill., Ind., Mich.	Wisconsin, Minn.	Virginia	Southern States	Western States
1902.....	17,821,307	11.71	3.33	57.65	10.58	1.54	3.01	10.66	1.52
1903.....	18,009,252	12.62	4.25	54.80	10.76	1.57	3.02	11.48	1.50
1904.....	16,497,033	10.24	5.26	57.87	11.45	1.28	1.88	11.10	.92
1905.....	22,992,380	10.45	6.56	58.60	10.10	1.53	2.22	8.77	1.77
1906.....	25,307,191	10.41	7.64	58.28	9.98	1.48	1.91	8.67	1.63
1907.....	25,781,361	10.95	7.89	56.73	11.23	1.25	1.86	8.28	1.81
1908.....	15,936,018	9.32	7.81	54.42	12.80	.93	2.01	10.74	1.97
1909.....	25,795,471	9.53	7.86	56.72	13.30	1.35	1.52	8.23	1.49
1910.....	27,303,567	10.04	8.07	54.58	14.38	1.12	1.63	8.61	1.57
1911.....	23,649,547	10.21	6.78	56.47	13.84	1.17	1.24	8.62	1.67
1912.....	29,726,937	9.37	6.65	57.69	15.67	1.02	.86	7.40	1.34
1913.....	30,966,152	9.68	7.06	57.18	15.19	1.19	1.10	7.55	1.05
1914.....	23,332,244	9.28	6.69	56.96	14.59	1.41	1.16	8.76	1.15
1915.....	29,916,213	8.48	7.04	59.22	14.82	1.25	.84	7.44	.91
1916.....	39,434,797	10.01	5.97	56.35	15.58	2.06	1.01	7.91	1.11
1917.....	38,621,216	10.18	6.26	54.69	15.83	1.91	1.35	8.61	1.17
1918.....	39,054,644	9.70	7.35	54.17	16.68	1.92	1.32	7.57	1.29
1919.....	31,015,364	8.64	6.68	56.01	17.00	1.95	1.03	7.48	1.21
1920.....	36,925,987	9.50	7.04	55.02	16.84	1.93	1.16	7.25	1.26
1921.....	16,688,126	7.82	5.80	54.90	21.01	1.36	.40	7.35	1.36
1922.....	27,219,904	7.53	6.51	55.09	19.66	1.40	.18	8.65	.98
1923.....	40,361,146	8.60	7.31	54.29	18.96	1.80	.69	7.55	.80
1924.....	31,405,790	8.69	6.41	53.76	18.95	1.14	.31	9.27	1.47
1925.....	36,700,566	8.04	5.96	53.93	21.05	1.28	.34	8.03	1.37
1926.....	39,372,729	8.08	6.83	53.66	20.41	1.37	.26	7.78	1.61
1927.....	36,565,645	8.64	7.11	51.69	21.31	1.25	.27	7.98	1.75
1928.....	38,155,714	7.95	6.28	53.71	22.35	.89	.20	6.96	1.66
1929.....	42,613,983	8.41	6.70	53.54	22.16	.89	.11	6.69	1.50
1930.....	31,752,169	9.12	6.46	51.09	22.92	.86	.30	7.57	1.68

20,000 tons from Algeria, northwestern Africa, now being shipped 4000 miles to the Canadian Furnace Co., Port Colborne, Ont. The report from New York (STEEL, June 4, page 80) has aroused considerable interest among Lake Superior iron ore producers. Port Colborne is approximately 20 miles west of Buffalo, at the southerly approach to the new Welland canal.

In July, 1929, 4000 tons of foreign manganese ore was unloaded at Buffalo, and smaller lots of special grades of foreign ore have moved by water as far inland as Chicago. Lake Superior producers, however, have no record of any ordinary grades of iron ore ever before coming to the Great Lakes. Some consider the present shipment as of no significance in the market; others view it as a forerunner of a larger movement in the future.

The ore is being carried to Montreal in three cargoes, the first, comprising 7350 tons, having arrived there recently in the steamer PEARLMOOR. At Montreal it is being loaded to smaller vessels for further passage through the St. Lawrence river, thence across Lake Ontario, and through the Welland canal. Except for a 120-mile stretch west of Montreal, which includes the Lachine rapids, the St. Lawrence is open from the sea to the Great Lakes for the largest freight vessels.

Rates 64 Per Cent Iron

The ore is reported to contain 64 per cent iron natural, and to be "very low" in phosphorus. There is comparatively little ore so rich in iron in the Lake Superior district, and it is closely held by companies associated with steel manufacturers. It is a hard lump ore, generally commanding a premium for structure.

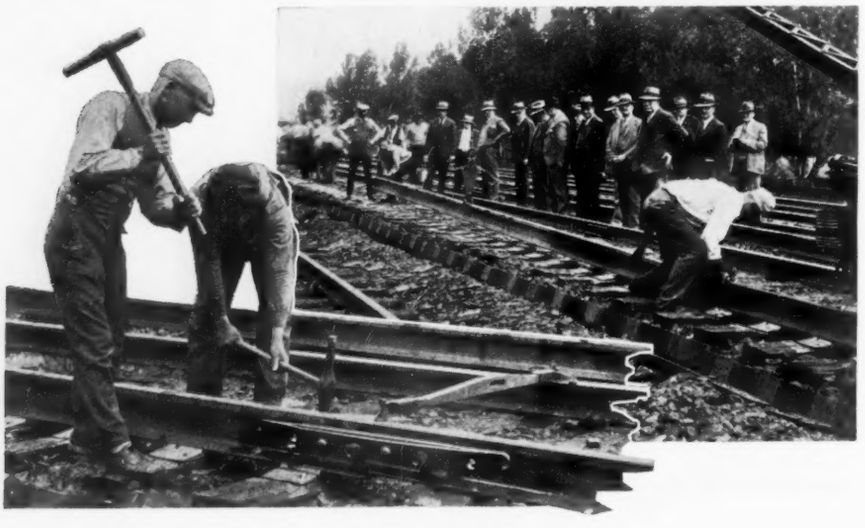
The imported ore is comparable to old range bessemer, which is 9.32 cents per unit, delivered lower lake ports. The usual price for imported ore of similar grade is 9 cents a unit, alongside dock, though it is reported at Cleveland 8½ cents was done. Figuring the lake ore only for 64 units of iron the price would be $5.97, delivered, compared with $5.44, for the foreign ore, delivered in this country. What considerations were made for tariff, extra long haul and trans-shipment are not known.

Pennsylvania Lays "Heaviest Rails in World", 152 Pounds to Yard

THE Pennsylvania railroad laid recently at Tyrone, Pa., what it claims to be the heaviest steel rails ever used in the main line track of any railroad in the world. The new rails weigh 152 pounds to the yard as compared with the Pennsylvania's present heavy rails of 130 pounds. They are 8 inches high, 1⅜ inches higher than the 130-pound rails. They are designed to sustain 100,000-pound axle loads at speeds of 100 miles per hour. Present maximum needs require rails sustain axle loads of 80,000 pounds at a speed of 80 miles.

Following investigation and research over two years by a committee of Pennsylvania railroad engineers a rail was designed which is said to have 75 per cent greater stiffness or strength than the present standard.

The 152-pound rails are the first of an experimental order rolled by the Bethlehem Steel Co., at its Steelton, Pa., plant. They will be placed in service at two locations on the railroad's main line between Pittsburgh and Harrisburg, Pa., and on the heavily traveled lines between New York and Philadelphia. Representatives of chambers of commerce and steel and railroad officials witnessed the laying of the rails.



Carriers Plan To Ask Flat Rate Increase at Once

New York—Executives of eastern and western railroads are understood to have agreed to apply to the interstate commerce commission for a blanket increase in freight rates approximating 15 per cent or sufficient to provide them the additional gross revenue of $400,000,000 annually which they declare they require to put them on a sound basis.

Formal application may be made to the commission this week in order to have the higher rates applicable before the end of the year, perhaps by the last quarter. Thus far nothing definite has developed from the southern carriers.

In some quarters it still is believed that agitation for rate increases to improve the railroads' financial position will lead to a more thorough scanning of railroad expenditures. With the wage bill still unchanged and representing the largest single item of outgo, railroad earnings must be improved shortly to prevent a number of railroad bond issues being removed from the legal investment list of eastern banks.

Roads Want Higher Rates, But Fear Competition

Chicago—Assent has been given by the western railroads to the preparation of a plea for an adjustment in freight rate structures.

Despite the fact there is a lack of agreement among the carriers as to what commodities should be affected, the general outcome of the adjustments is expected to bring about an approximate 10 per cent increase in revenues of the railroad, an amount that would total $160,000,000 annually for the western district.

Iron and steel shippers here believe a horizontal increase in rates would result in much diversion of iron and steel traffic to water and other forms of transportation. It is stated that the southwestern roads do not feel they can raise rates on petroleum because of pipe lines.

More Weight, Lower Rates?

Boston—An increase in the minimum carload weight of scrap in return for a reduction in freight rates has been proposed by the Boston chap-

ter of the Institute of Scrap Iron and Steel. Minimum weights would be increased to 25 or 30 tons, against the present 20-ton minimum on most scrap items. The reduction in rates asked is about 25 per cent.

Dodge-Foote Merger Still Needs Consent of Stock

Chicago—Announcement is made here that another 30 days may elapse before further developments take place in the proposed merger of Foote Bros. Gear & Machine Co., Chicago, and Dodge Mfg. Corp., with plants at Mishawaka, Ind., and Oneida, N. Y. Negotiations have been under way for a consolidation of the two companies into a $10,000,000 company to be known as the Dodge-Foote Corp., but approval of the stockholders must be obtained first.

Activities of the two companies will supplement each other, if the deal goes through, it is stated. The Foote Bros. company produces gears and speed reduction units, and the Dodge corporation manufactures mechanical power transmission machinery. Plans do not include acquisition of the assets of either company by the other, but embrace a merger plan through exchange of stock and assumption of liabilities by both companies, requiring no public financing.

Wage Cuts Contemplated By Western Railroads

Chicago—Western railroads are believed considering seriously probable wage reductions, despite an improved outlook in shipping. This is a part of the general movement to effect economies. It is pointed out that following the postwar deflation of 1920-21, the carriers reduced wages even during the period of recovery.

Otis Orders Cold Mill

United Engineering & Foundry Co., Pittsburgh, has received from the Otis Steel Co., Cleveland, the contract for a new cold-rolling mill, but delivery will not be made until fall because of business already on United's books. This order supplements one for a new hot mill for Otis, which also is reconstructing a hot mill at its Riverside works in Cleveland.

To Simplify Screen Cloth

Washington—A general conference on the simplification of wire screen cloth has been called for the Hotel Biltmore, New York, June 18, by the bureau of standards. Separate recommendations for simplifying steel wire screen cloth and bronze and copper wire screen cloth will be considered.

Canada's Tariff Wall Not as High as Steelmakers Feared

CANADA'S new tariff schedules treat steel and iron importations from the United States relatively lightly in the new rates announced by Premier Bennett and put into effect June 3. Compared with coal, coke and fruits, steel was given little increase and in some cases duties were lower than in the preceding schedule.

Automobiles and automotive parts have been hit hard, cars over $2100 being assessed a rate of 40 per cent, those from $1201 to $2100 at 30 per cent and lower priced cars at unchanged rates.

In steel plates, discrimination is shown in imposing a duty of $7 per ton for widths not over 60 inches and $5 for plates more than 60 inches in width. The purpose of this is evidently to encourage Canadian steelmakers to produce wide plates, and provision is made that when plates are being rolled in Canada up to 120 inches in width sufficient for Canadian demand the rate may be changed to $7 for plates not more than 120 inches in width and $5 for those over that width.

Steel billets for seamless tube manufacture are given a 5 per cent tax. In the cases of sheets, hoops, bands and strip duties are graduated according to the use to be made by manufacturers, the differentials being dictated by the present state of supply in Canada, with a view to encouraging establishment of industries to convert the raw materials into finished products at home. Details of these provisions are shown in the accompanying schedule of the new rates.

Increased rates are placed on steel plates, wire netting, machinery, safes and miscellaneous manufactures of iron and steel. Decreases have been made on bessemer billets, hot-rolled strip for cold rolling, green saw steel and various classifications of steel wire.

Estimates 4 Per Cent Cut

The effect of the new tariff in relation to imports from the United States, according to Dr. Julius Klein, assistant secretary of commerce, will be confined to a decline of about $25,000,000 worth of goods, which is slightly less than 4 per cent of American exports to the dominion in 1930. Dr. Klein says:

"It should be remembered that Canada, like all economically new lands, has for years been using high

"Stahl Uberall" is the slogan of the Berlin building exposition, whose latest feature is a three-tier diving tower of welded steel tubing. The tower is 10 meters (33 feet) high. Ruhemann, of Berlin, was the architect, according to World-Wide Photos

protective tariffs to develop a more evenly balanced economy. Her excessive seasonal variation makes such a policy inevitable as a means of equalizing employment irregularities.

"The Canadian tariff, even before the recent changes, yielded a ratio of customs revenue to total imports of nearly 15 per cent, as against 13.5 per cent in the case of the United States in 1929. Furthermore, as an additional measure of Canada's protective policy, it may be noted that her receipts of dutiable imports per capita in 1929 was $78.49, as against $12.71 for the United States.

"American investments in Canada now total between $3,600,000,000 and $3,900,000,000, which affords some measure of our stake in stability and strength of the Canadian economic situation. British holdings in the Dominion total about $2,300,000,000."

American exports to Canada of iron and steel in 1930 included the following quantities with the valuations:

Iron and steel plates not fabricated, 86,274 net tons, $3,685,000.

Iron and steel sheets, galvanized, 21,376 net tons, $1,548,000.

Steel sheets, black, 105,766 net tons, $6,708,000.

Tin plate, terne plate, taggers tin, etc., 62,474 net tons, $6,720,000.

Pipe casing and oil line, 7,840 net tons, $809,000.

Wider Plate Rolls Planned

G. W. Sherman, president of the Dominion Foundries & Steel, Ltd., Hamilton, Ont., is quoted as saying his company now will put in wider plate rolls to furnish a complete line of made-in-Canada plate steels.

The accompanying schedule of tariff rates covers the principal steel and iron items. Three rates are given on each item. The first rate is the British preferential, applying to goods from Great Britain and from other parts of the British Empire. The second rate is known as the intermediate and is applied in return for favors in tariff treatment by other countries. The third is the general tariff, applying to goods from all other countries. Details of the new rates follow:

Chromium metal and tungsten metal, in lumps, powder, ingots, blocks or bars, and scrap of alloy metal containing chromium and tungsten, when imported by manufacturers for use exclusively for alloying purposes, in their own factories, Free, Free, Free.

Billets of steel of Bessemer quality, when imported by manufacturers of seamless steel tubes for use exclusively in the manufacture of seamless steel tubes in their own factories, Free, 5 per cent, 5 per cent.

Plates of iron or steel, hot or cold rolled—(a) Not more than 60 inches in width, n.o.p., per ton, $4.25, $6.00, $7.00. (b) More than 60 inches in width, n.o.p., per ton, Free, $3.00, $5.00. (c) Flanged, dished or curved, n.o.p., 10 per cent, 25 per cent, 30 per cent. Provided, that the Governor-in-Council may, when satisfied that iron or steel plates are being rolled in Canada up to a width of 120 inches, and that the same can be rolled in quantity and quality sufficient for Canadian requirements, by Order-in-Council direct that there be substituted for sections (a) and (b) of this Tariff Item, the following: (a) Not more than 120 inches in width, n.o.p., per ton, $4.25, $6.00, $7.00. (b) More than 120 inches in width, n.o.p., per ton, Free, $3.00, $5.00.

Hoop, band or strip, rolled or drawn coated or not, when imported by manufacturers of mats for use exclusively in the manufacture of mats in their own factories, Free, 5 per cent, 5 per cent.

Sheets, plates, hoop, band or strip, not tempered or ground nor further manufactured than cut to shape, without indented edges, when imported by manufacturers of saws or straw cutters for use exclusively in the manufacture of saws or straw cutters, in their own factories, Free, Free, Free.

Sheets of iron or steel, cold rolled, when imported by manufacturers for use exclusively in the manufacture of sheets coated with tin, and sheets, hoop, band or strip, of iron or steel, hot rolled, when imported by manufacturers for use exclusively in the manufacture of sheets, hoop, band, or strip coated with zinc or other metals, not including tin, in their own factories, 5 per cent, 7½ per cent, 10 per cent.

Strip Is Listed

Hoop, band or strip, hot rolled in coils, not less than 100 feet in length, when imported by manufacturers for use exclusively in the manufacture of cold rolled iron or steel, in their own factories, Free, 5 per cent, 5 per cent.

Hoop, band or strip, cold rolled, electro galvanized, six inches or less in width, in coils of not less than 100 feet, when imported by manufacturers for use exclusively in the manufacture of rolling doors of steel, in their own factories, Free, 7½ per cent, 7½ per cent.

Tubing, of wrought iron or steel, not more than one-half inch in diameter, in lengths not less than six feet, coated with metal, not polished, bent nor further manufactured, when imported by manufacturers to be further processed, in their own factories, Free, 7½ per cent, 7½ per cent.

Pipes and tubes, not exceeding two inches in diameter, made from puddled iron, when for use exclusively in casing oil wells, Free, Free, Free.

Woven or welded wire fencing, of iron or steel, coated or not, n.o.p.; wire cloth or wire netting, of iron or steel, coated or not, 25 per cent, 35 per cent, 35 per cent.

Flat or woven flat, including steel strip, in the coil, coated or not, 0.064 inch in thickness or thinner, with tolerance not to exceed 0.002 inch, when imported by manufacturers of corset clasps, steels, wires and dress stays for use exclusively in the manufacture of corset clasps, steels, wires and dress stays, in their own factories, Free, 5 per cent, 7½ per cent.

Believe U. S. Steel Will Expand at Ojibway

New York—Although nothing official has developed, it is assumed that the United States Steel Corp. will expand its Ojibway, Ont., plant, across from Detroit, to meet conditions arising from the new Canadian tariff. Original plans for Ojibway called for a rounded-out unts including blast furnaces. Construction has been only partially completed.

Wiremaking involving a consolidation of operations at Hamilton, comprised the principal activity at Ojibway for some time. When the Canadian tin plate tariff become effective the Corporation began sending black plate there for tinning. The next logical move is to install complete rolling mill equipment, shipping sheet bars to Ojibway.

The Business Week In Washington

FEDERAL trade commission has completed revising the trade practice rules of some eighty industries, including scrap iron and steel, steel office furniture, reinforcing steel, structural steel and solid section steel windows. Interested industries have 60 days in which to file exceptions.

□ □ □

Only 3470 immigrants came into the United States during April, which is less than one-sixth the number entering the country last April.

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Senator Bratton, of New Mexico, has stated that there is no chance that congress will change the tariff rate on copper at the next session.

□ □ □

Railroads filing briefs with the interstate commerce commission in connection with its investigation of bus transportation are urging federal regulation.

□ □ □

Taxes on gifts, increases in estate taxes, and in the higher brackets of the income tax will be proposed by Senator King, of Utah, at the next session of congress, he has announced.

To Rebuild Strip Mill

National Steel Corp., Pittsburgh, has started rebuilding a 10-inch strip mill at its Weirton, W. Va., plant with a capacity of 10,000 tons a month into a combination mill. It will be able to roll 7000 to 8000 tons a month of small merchant bars, ¼ to 1¾-inch size, small angles and shapes, without affecting its efficiency for rolling strip. The mill will start rolling again July 1.

Coal Strike Issues Confused; Many Return

Pittsburgh—Striking mine workers in western Pennsylvania have staged

several demonstrations near the mines to impress miners who have remained at work, leading to several instances of disorder, and an appeal to Governor Pinchot by the mine workers' representatives to call off the state troops who have helped police curb unruly mobs.

Considerable confusion exists as to the issues involved. At some mines the men claim to be striking against wage reductions; at others it is reported they are striking for higher wages, and still others, for modifications in working conditions. In one or two instances the men walked out with the intention of formulating demands later if more could be induced to join them.

Leadership of the miners is divided between the United Mine Workers of America and the new National Miners' union, the "left wing" of the United Mine Workers. About 2800 men are reported to have returned to work, with 1400 still out, though mine workers claim many more remain on strike.

Eastern steel producers are watching strike developments in the coal regions closely as stocks at most plants are exceedingly low.

Wage Reductions Slower Than at Turn of Year

Wage rates of 127,648 employes in 933 manufacturing establishments have been reported to the bureau of labor statistics as reduced since Dec. 15, 1930. The number of those affected by reductions has been diminishing, as between Dec. 15 and Jan. 15 the rates of 43,507 were lowered, whereas between April 15 and May 15, only 22,543 were put on a lower basis. The total number of establishments in the iron and steel and allied groups to report wage rate reductions since Dec. 15 is 166.

The cut in rates for all industries in which changes have been made averages about 10 per cent. Increases, which average about 5 per cent, have been reported by 39 establishments, affecting 2396 employes since Dec. 15.

The bureau receives returns from more than 45,000 establishments, now employing nearly 5,000,000 workers. Following are the wage rate increases and decreases reported:

Increases

	No. of establishments	Employes Affected
Dec. 15-Jan. 15	23	1,664
Jan. 15-Feb. 15	3	209
Feb. 15-March 15	5	178
April 15-May 15	8	345
Totals	39	2,396

Decreases

Dec. 15-Jan. 15	335	43,507
Jan. 15-Feb. 15	228	39,096
Feb. 15-March 15	175	22,502
April 15-May 15	195	22,543
Totals	933	127,648

Empire Employes Cut Own Wages, after Winning Strike

EMPLOYES of the Mansfield, O., plant of the Empire Steel Corp., who went on strike recently against a 15 per cent wage reduction, and who returned when the order was rescinded, have agreed voluntarily to a cut amounting to 5 per cent. The proposal came from a committee representing the 1600 employes after a mass meeting June 7, and was said by company officials to have been a complete surprise.

Developments since the end of the strike, May 15, put the economics of the situation in a new light before the employes. The corporation went into friendly receivership May 28 at a meeting of creditors in Cleveland. Carl H. Henkel, president, was appointed receiver by the United States district court. June 5 the court granted the corporation permission to continue operations at Mansfield and Cleveland, and also to resume operations at Niles, O.

Impressed with this evidence of the corporation's financial difficulties, the committee appointed by employes during the strike called a meeting at Mansfield. The vote is reported to have been unanimous and the reduction is effective immediately.

"I feel the employes are co-operating," said President Henkel.

The employes refused to join the Amalgamated Association of Iron, Steel and Tin Workers.

Salaries Down, Hold Wages

Colorado Fuel & Iron Co., Denver and Pueblo, Colo., has reduced salaries but is not considering reducing wages of its employes, the company recently advised the Colorado industrial commission.

Steel Employment Down Only 0.1 Per Cent in April

Washington—Employment in iron and steel manufacture showed a reduction of only 0.1 per cent in April, compared with March, according to the bureau of labor statistics. The increase in March over February was 1.5 per cent, and in February over January, 0.4 per cent. Weekly payroll totals in the same establishments —187—registered a reduction of 0.7 per cent in April.

Employment in 150 machine tool plants was reduced 2.9 per cent, and payroll totals 3.8 per cent. For 170 structural steelworks plants the reduction in the number employed was 1.7 per cent, and for payrolls, 5 per cent. An increase of 3.5 per cent in employes and 6.5 per cent in payrolls was reported for 43 cast iron pipe manufacturers.

Gary, Ind., Marks 25 Years From Sand Dunes to City

Chicago—Gary, Ind., today a city of 100,000 persons, due almost entirely to the upbuilding of western subsidiaries of the United States Steel Corp., celebrated the twenty-fifth anniversary of its founding June 4.

On what were sand dunes in 1906

STEEL EMPLOYES WILL GROW THEIR OWN VEGETABLES

In connection with the relief they are extending to employes during the present era of part-time operations, subsidiaries of the United States Steel Corp. are making garden plots available to them for immediate planting. The work that has been done along this line at the National Tube Co., Lorain, O., works, is a typical example. At Lorain, the company's property includes a fertile field of 35 acres. This has been plowed and subdivided into garden plots for 310 employes

now stand the 12 blast furnaces, 52 open-hearth furnaces, 976 by-product coke ovens and the various finishing mills and collateral activities of the Illinois Steel Co. Nearby are units of the American Bridge Co., American Sheet & Tin Plate Co., National Tube Co., and Universal Atlas Cement Co.

Although the Gary Land Co., a subsidiary of the Steel corporation, bought 10,000 acres as the site for the city, paying from $5 to $2,000 per acre, it states it has operated purposely without profit.

William P. Gleason, superintendent of the Gary works of the Illinois Steel Co., presided at the pioneers' banquet. Mr. Gleason was one of the first settlers of Gary, helping organize and build the Gary works. Capt. H. S. Norton, who as agent of the Gary Land Co. assisted in the development, also was present.

Purchasing Agents Told of Progress in Carbide Tools

Toronto, Ont.—Progress in improvement and application of carbide cutting tools was reported by the tool steel committee of the National Association of Purchasing Agents, meeting here this week. The committee was of the opinion that general preference existed for tungsten carbide over tantalum carbide as a tool material.

Further discussion in a session devoted to steel indicated that efforts are being made to obtain tougher cores and more elastic cases for nitrided steels. A suggested color code for steel identification was endorsed by the group.

Changes in the standard sales agreement for gray iron castings, suggested by the Gray Iron institute, were explained and approved. Results of a survey of manufacturers indicated opposition to furnishing price lists for spare parts for machinery and equipment. Approval was given to the plan for establishment of a committee to work out standardization details for valve fittitngs.

Nothing would prove more stimulating to business today than a $5 per ton advance in the price of steel products, declared W. S. Doxsey, editor of *Daily Metal Trade*, Cleveland.

Expansion Without Plan Deemed Depression Cause

"The present depression is the result of previous tremendous expansion without careful over-all planning on the part of industry and government," declared A. W. Robertson, chairman, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., at a dinner in his honor given by George M. Verity, chairman, American Rolling Mill Co., at Cincinnati, June 4. The purpose of the dinner was to acquaint Mr. Robertson with the industrial and civic leaders of the Miami Valley.

Will Tour Scrap Centers

New York—Herman D. Moskowitz, president of the Institute of Scrap Iron and Steel Inc., shortly is to undertake a tour of the country in behalf of the Institute. Benjamin Schwartz, director general, will accompany Mr. Moskowitz on part of the tour.

Standards Are Extended

Washington—The division of simplified practice has extended the standards on sheet steel and on iron and steel roofing for one year without change.

Steel Shelving Orders Are Lowest This Year

Orders for steel furniture in April valued at $1,436,899 were at the lowest point in more than a year. Shipments, too, were at the lowest ebb in many months. New orders for shelving, amounting to $369,878, registered the lowest monthly total this year. Comparisons from the department of commerce follow:

(In Dollars, 000 omitted)

	Business Group		Shelving	
	New orders	Shipments	New orders	Shipments
1930				
April	2,523	2,427	796	814
4 mo.	10,407	10,594	3,119	2,984
May	2,310	2,342	725	751
June	2,006	2,168	699	705
July	1,840	1,811	596	604
Aug.	1,788	1,985	526	555
Sept.	1,795	1,879	512	497
Oct.	1,855	1,901	534	593
Nov.	1,637	1,673	429	458
Dec.	1,565	1,800	242	468
Year	25,204	26,154	7,382	7,615
1931				
Jan.	1,798	1,797	376	393
Feb.	1,509	1,598	375	356
March*	1,521	1,590	416	436
April	1,437	1,487	370	387
4 mo.	6,266	6,473	1,536	1,571

*Revised.

Range Boiler Output Up; Shipments Are Down

While production of range boilers increased in April to 49,290 units, the third consecutive monthly gain, shipments fell off to 48,544 units. Production and shipments in April, 1930, were 55,019 and 58,322, respectively. Unfilled orders, 30 days or less, stood at 8,249 in April, down from the March level of 10,882, reaching the lowest point since last November, when the figure stood at 6870. These figures are based on reports to the department of commerce from 17 manufacturers, representing 90 per cent of the industry, having a daily capacity of 7682 boilers.

Galvanized Ware Output Shows Loss for April

After touching in March the highest point since May, 1929, production of galvanized pails and tubs declined in April. Shipments also fell off, according to the figures of the department of commerce, based on reports of 13 manufacturers representing the major portion of the industry:

In Dozens

	Pails and Tubs		Other Ware
	Production	Shipments	Production
1930			
April	131,015	120,552	44,058
4 mo.	531,520	540,738	151,124
May	113,645	107,496	44,405
June	89,982	82,956	40,646
July	91,879	104,096	42,056
Aug.	103,050	103,354	46,730
Sept.	103,177	116,875	38,218
Oct.	130,906	115,185	40,084
Nov.	60,798	68,330	16,061
Dec.	87,140	68,898	21,657
Year	1,309,097	1,307,928	440,981
1931			
Jan.	103,677	133,977	23,716
Feb.	132,781	120,723	34,347
March	146,438	144,637	31,542
April	143,258	140,080	34,929
4 mo.	526,154	539,417	124,534

Steel Barrel Total Rises for Fourth Month

Steel barrel production and shipments in April registered the fourth consecutive monthly gain in production and shipments. Department of commerce comparisons follow:

	Production	Shipments	Unfilled orders within 30 days
1930			
April	769,061	766,617	322,161
4 mo.	2,796,220	2,795,012	.....
May	731,087	736,147	393,843
June	651,559	638,358	319,754
July	617,420	621,091	311,630
Aug.	553,842	552,265	237,745
Sept.	564,927	565,204	253,745
Oct.	616,121	619,558	275,778
Nov.	497,539	500,409	230,960
Dec.	412,283	406,327	188,902
Year	7,440,998	7,434,371	.....
1931			
Jan.	421,814	427,622	210,416
Feb.	450,134	449,485	231,738
March*	550,583	554,332	242,626
April	591,399	600,566	253,622
4 mo.	2,013,930	2,032,005	.....

*Revised.

Gray Iron Production Off After Three Months' Gain

Output of gray iron foundries reporting to the Gray Iron Institute Inc., Cleveland, dropped 2.2 points in April to 58.2 per cent from the 60.4 per cent level of March. This was the

first decline after three consecutive monthly gains.

New business fell off 6 points to 60.9 per cent of capacity; unfilled orders dropped 3.3 points to 43.7 per cent; material received amounted to 58.5 per cent, a slight gain, while material on hand worked down 6.2 points to 115 per cent.

Three foundries considered the business outlook good, the same as in March; 43 reported it fair, compared with 54 in March; 58 again said it was poor; and 17 believed conditions to be bad, as against 16 the preceding month.

Decline During April in Pittsburgh River Traffic

River shipments of iron and steel products in the Pittsburgh district declined during April but were larger than during the corresponding month of 1930. Movement over the Ohio, reflecting the increased traffic in long hauls, increased from 315,514 tons in 1930 to 359,715 tons during the first four months of 1931. Comparative monthly figures follow:

1930	Allegheny	Monongahela	Ohio
April	1,000	70,229	66,482
4 mo.	1,410	321,042	315,514
May	.....	117,942	128,502
June	700	137,603	144,099
July	1,125	132,161	147,558
August	2,600	96,498	107,948
Sept.	5,100	106,079	109,129
Oct.	11,490	105,451	138,109
Nov.	17,850	75,202	95,644
Dec.	3,800	46,972	50,403
Year	44,075	1,133,950	1,236,906
1931			
Jan.	50	90,405	88,089
Feb.	.....	58,847	75,264
March	.....	76,137	104,792
April	1,250	57,751	91,570
4 mo.	1,300	283,140	359,715

Sale of Stokers Picks Up During April

Sixty-five stokers of 18,723 horsepower were sold in April, against 63 having 17,993 horsepower in March, so 11 leading manufacturers report to the department of commerce. Sales statistics follow in comparison:

	Stokers sold	Fire tube boilers	Water tube boilers
1930			
April	108	46	62
4 mo.	323	141	182
May	96	41	55
June	151	70	81
July	150	83	67
August	115	61	54
September	128	71	57
October	92	46	46
November	71	41	30
December	53	35	18
Year	1,179	589	590
1931			
January	85	40	45
February	67	37	30
March	63	27	36
April	65	32	33
4 mo.	280	136	144

Steel Ingot Output Shows 8 Per Cent Drop in May

STEEL ingot production in May declined for the second consecutive month, being 7.97 per cent under that of April, which, in turn, was 9.04 per cent under March, the latter month being a peak for seven months.

Daily output in May of open-hearth and bessemer ingots was 96,365 gross tons, compared with 104,711 tons in April and 115,138 tons in March. The previous high mark was in August, 1930, with 117,722 tons.

Total output in May, as calculated by the American Iron and Steel institute, based on reports from companies producing 95.21 per cent of total output in 1930, was 2,505,485 tons, compared with 2,722,479 tons in April and 2,993,590 tons in March. For five months of 1931, daily average output is 102,191 tons, compared with a daily average of 155,078 for five months of 1930.

In May, 45.36 per cent of capacity was engaged, compared with 49.29 per cent in April and 54.20 per cent in March. Average capacity engaged in the five months was 48.10 per cent. In five months of 1930 average capacity engaged was 77.46 per cent. Comparisons of March, April and May are on the basis of the same number of working days, 26 in each case.

Output of Coke Shows Reversal Against March

Due chiefly to the close of the heating season and the coming of milder weather, production of coke decreased slightly in April, in spite of the continued upward trend in the production of pig iron. Decrease in coke output was entirely accounted for by the merchant plants, according to the department of commerce. Month's figures follow for by-product and beehive grades:

In net tons

1930	By-product coke	Beehive coke	Total coke
April	4,246,436	301,700	4,548,136
1931			
April	3,146,490	108,600	3,255,090

Steel Ingot Production—1930-31

95.21 Per Cent of Industry Reporting
Gross Tons

1930	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	3,157,761	441,572	3,599,333	3,778,235	27	139,935	69.89
Feb.	3,335,428	508,618	3,844,046	4,035,111	24	168,130	83.98
Mar.	3,513,269	539,616	4,052,885	4,254,331	26	163,628	81.73
Apr.	3,405,671	509,234	3,914,905	4,109,492	26	158,057	78.95
May	3,265,353	528,968	3,794,321	3,982,915	27	147,515	73.68
5 mo.	16,667,482	2,528,008	19,205,490	20,160,084	130	155,078	77.46
June	2,849,079	407,586	3,256,665	3,418,535	25	136,741	68.30
July	2,430,128	353,723	2,783,851	2,922,220	26	112,393	56.14
Aug.	2,541,367	374,467	2,915,834	3,060,763	26	117,722	58.80
Sept.	2,275,910	429,975	2,705,885	2,840,379	26	109,245	54.56
Oct.	2,165,341	399,704	2,565,045	2,692,539	27	99,724	49.81
Nov.	1,807,133	300,337	2,107,470	2,212,220	25	88,489	44.20
Dec.	1,659,026	226,788	1,885,814	1,979,547	26	76,136	38.03
Total	32,405,466	5,020,588	37,426,054	39,286,287	311	126,322	63.09
1931							
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
5 mo.	10,993,124	1,558,038	12,551,162	13,182,609	129	102,191	48.10

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

Industrial Men in the Day's News

Frederick M. Feiker, Director, Bureau of Foreign and Domestic Commerce, Washington

AS director of the government's foreign trade bureau he returns to head a federal organization which he helped President Hoover reorganize.

HIS background in business includes 15 years of active connection with business papers, the past few years heading up their national organization.

IN his previous connection with the department of commerce he assisted in promoting simplified practice, and cooperated with the bureaus of the census and standards.

FORMERLY a member of the committee on domestic distribution of the bureau of foreign and domestic commerce, Frederick M. Feiker brings to the directorship of that bureau not only actual experience in the conduct of its affairs but also a background of many years in business paper and trade association activity.

Mr. Feiker's appointment to succeed William L. Cooper as director of the bureau was noted briefly in STEEL of June 4. Since 1926, Mr. Feiker has been managing director of Associated Business Papers Inc., New York, but his experience in technical publishing dates back more than two decades before that.

Born in Northampton, Mass., June 14, 1881, Mr. Feiker received his B. S. degree in electrical engineering from Worcester Polytechnic institute in 1904. He became technical journalist for the General Electric Co., Schenectady, N. Y., writing for business and industrial papers. Later he was identified with A. W. Shaw Co., New York, establishing *Factory*. He subsequently became chairman of the editorial board of *System* and *Factory*. In 1915 he was made editor of *Electrical World*, published by McGraw Publishing Co., and he also guided the early development of *Electrical Merchandising*.

Eventually he became vice president and editorial director of McGraw-Hill Co., Inc., which in 1921 granted him leave of absence to become assistant to the secretary of commerce at Washington, who then was Herbert Hoover. He subsequently served under this department as chairman of the advisory committee of the census of distribution; chairman of the Louisville conference on retail distribution, and consultant in organization and personnel for the department of commerce, especially for its three bureaus intimately related to industry and trade—foreign and domestic commerce, census and standards. Upon him Mr. Hoover leaned heavily in reorganizing the department of commerce.

In connection with this work, Mr. Feiker served at different times as chairman or member of special committees, including the planning committee of the division of simplified practice, advisory committee on domestic distribution for the bureau of foreign and domestic commerce, and several other committees. Upon completion of his governmental work at Washington in 1923, he became operating vice president of the Society for Electrical Development, New York, where he organized competitive commodity promotion campaigns for groups of manufacturers. He continued too for a time as consultant of the McGraw-Hill Co. He was appointed managing director of the Associated Business Papers Inc., New York, in December, 1926.

Mr. Feiker long has been active in supporting the true purposes of trade organizations and served as a member of the executive committee of the American Trade Association Executives. He has been energetic on committees of this and other associations, especially in espousing various causes such as commercial research, and fact-finding as a basis for effective co-operative development.

J. KENNEDY, who was for 22 years general manager of sales for the National Tube Co., Pittsburgh, has been appointed vice president in charge of sales to succeed John H. Nicholson, retired. D. H. Ramsbottom has succeeded Mr. Kennedy as general manager of sales. H. C. Gerwig and W. F. McConnor have been appointed assistant general managers of sales. James B. Graham, formerly superintendent of field work and inspection, has been transferred to the sales department in charge of field work.

Mr. Kennedy started with National Tube Co. in 1903 as credit manager, having previously served two years as secretary of the Credit Managers' association, an affiliated interest of the United States Steel Corp., New York.

Mr. Ramsbottom has been identified with National Tube Co. for most of his business career. He started at National works, McKeesport, Pa., where he later became auditor. He was employed in other capacities prior to entering the sales department. He has been assistant

general manager of sales about 20 years.

Mr. Gerwig has been with National Tube since 1910, entering the engineering department. He joined the general sales organization in 1915.

Mr. McConnor became a designer for National Tube in 1915. After engineering experience he became assistant superintendent of Christy Park works in 1920. Since 1922 he has been construction engineer in the general office.

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Chester F. Hockley has been appointed president and general manager of Bartlett-Hayward Co., Baltimore, to succeed Howell Fisher. Mr. Hockley was vice president for ten years.

□ □ □

Norman Houston has resigned as manager of the New York office of Alan Wood Steel Co., Philadelphia, effective June 30. He was appointed to that office in January, 1930.

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Carl J. Jernstrom, for the past nine years superintendent of Riverside Steel Casting Co., Newark, N. J., is now with Roxbury Steel Casting Co., Boston.

□ □ □

Lewis G. Blessing, formerly vice president and general manager of Bastian-Blessing Co., Chicago, manufacturer of regulators, carburetors, etc., has been elected president, to succeed Charles Bastian, now chairman of the board.

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O. E. Van Altena, identified with the automotive industry for 17 years, has been appointed middle western district sales manager of Aluminum Industries Inc., Cincinnati. His headquarters are at 1925 South Wabash avenue, Chicago.

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Herbert C. Rowland, formerly vice president of William & Harvey Rowland Inc., Frankford, Philadelphia, has been appointed president to succeed the late George T. Rowland, whose death May 16 at Detroit was noted in STEEL of June 4.

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L. C. McCaskill, formerly with the General Motors Acceptance Corp., Detroit has been appointed special representative in southwestern territory for Aluminum Industries Inc. Mr. Caskill's headquarters will be in Kansas City, Mo.

□ □ □

L. H. Bloom, general sales manager, Oliver Farm Equipment Co., Chicago, has resigned after 28 years in the farm equipment industry. Mr. Bloom formerly was vice president in charge of sales for Hart-Parr Co., Charles City, Iowa, now a division of Oliver Farm Equipment Co.

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M. B. Lambert, assistant to the vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., will take over the general direction of advertising in addition to his other duties. This follows the resignation of J. C. McQuiston, general advertising manager, as noted in STEEL of May 28.

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Charles R. McConner, Detroit manager for Carrier-York Corp., Newark, N. J., and Philadelphia, has been appointed sales manager of Clarage Fan Co., Kalamazoo, Mich. Prior to going with the Carrier corporation, Mr. McConner had been with Clarage Fan since 1920.

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H. M. Lawrence, mining engineer, and S. W. Benham, assistant engineer, have been added to the engineering staff of the American Standards association, New York. Mr. Lawrence will supervise all mining, chemical and ferrous and nonferrous metallurgy projects developed under the association's activity. Mr. Benham will assist in the supervision of civil engineering and transportation projects.

Harry L. Brindle

Who as noted in STEEL of June 4 has been appointed general superintendent, Farrell works, Carnegie Steel Co., in succession to A. L. Cromlish

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E. J. Fullam has been elected president of Bryant Chucking Grinder Co., Springfield, Vt., to succeed the late W. L. Bryant. W. J. Bryant, advertising manager, has been made vice president, J. E. Stetson general manager, J. B. Johnson assistant general manager, and A. L. Hicks, assistant treasurer.

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D. J. Quammen, with the Philadelphia office of Cutler-Hammer Inc., Milwaukee, for five years as sales engineer, has been appointed manager of that district. He succeeds F. J. Burd, made assistant manager of the Chicago office. Mr. Burd will have charge of industrial sales in the Chicago district and of the company's paper machine drive throughout the country.

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J. W. Bersheid, of Joliet, Ill., has been appointed superintendent of Fairfield, Ala., works of American Steel & Wire Co., Cleveland. He succeeds Thomas D. Temple, who filled that position for 15 years and who has been transferred to Joliet to take charge of the corporation's two plants there, as noted in STEEL of June 4.

□ □ □

George F. Newell has been elected vice president and general manager of Pyrometer Service & Supply Corp., Cleveland, subsidiary of Claud S. Gordon Co., Chicago, pyrometer and industrial X-ray engineer. Mr. Newell formerly was St. Louis representative of Charles Engelhard Co., and more recently was its Chicago representative.

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A. D. Hunt, formerly manager of engineering at South Philadelphia, Pa., works of Westinghouse Electric & Mfg. Co., East Pittsburgh, has been transferred to the company's Chicago office. He will be identified with the company's activity in connection with steam apparatus in western districts.

□ □ □

A. D. Ferguson has been made works manager for Sullivan Machinery Co., Michigan City, Ind. He formerly was superintendent, and has been succeeded by A. F. Millar. Mr. Ferguson succeeded S. T. Nelson, who retired April 30 after 45 years with the company, as noted in STEEL of May 28.

□ □ □

J. M. Kaufman, has resigned as superintendent of the malleable iron foundry, Stockham Pipe & Fittings Co., Birmingham, Ala., to become superintendent of Jefferson Union Co., Lockport, N. Y. Before becoming associated with the Stockham company, Mr. Kaufman was production manager, Meadville Malleable Iron Co., Meadville, Pa., for ten years prior to 1930.

Obituaries

EDWARD W. PUTNAM, 35, vice president and general manager of Kelly Reamer Co., Cleveland, died June 1 at Springfield, O., following an automobile accident. He formerly resided at Columbus, O.

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Joseph Levick, 47, proprietor of Republic Iron & Metal Co., Erie, Pa., died June 2.

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George Buchanan, president of Long Island Foundry Co., Long Island City, N. Y., died May 22.

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Alfred T. Wagner, 50, Detroit,

(*Concluded on Page 69*)

Here and There in Industry

HARDIE-TYNES MFG. CO., Birmingham, Ala., is shipping to Insull interests at Chicago a specially designed two-stage gas compressor of a new type. It has displacement of 5000 cubic feet per minute and occupies 24 x 18 feet, 12 feet high. Its weight is 170,000 pounds and four cars are needed for its movement. It is designed to compress gas to 150 pounds per square inch and is driven by a direct-connected 1000-horsepower synchronous motor running at 150 revolutions per minute.

The same manufacturer is delivering machinery for the new universal plate mill of the Tennessee Coal, Iron & Railroad Co., manufactured under design of Mackintosh-Hemphill Co., Pittsburgh. The equipment built at Birmingham for this mill required more than 1000 tons of steel and iron.

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Pressed Steel Car Co., Pittsburgh, has moved its New York offices to 80 Broad street.

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Fred S. Gichner Iron Works Inc., Washington, has moved to 1214 Twenty-fourth street, N. W.

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Lawrenceville Bronze Co., formerly located in the Fulton building, Pittsburgh, has moved its general offices to 401 Bessemer building.

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Continental Roll & Steel Foundry Co., Chicago, has moved its Pittsburgh office from the Union Bank building to 2105 Grant building.

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Manganese Steel Forge Co., Philadelphia, has leased space for western district offices in the Builders' building, 228 North La Salle street, Chicago.

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Kiefer Sheeting & Painting Co., House building, Pittsburgh, has been awarded the contract for erecting the corrugated sheeting on the No. 2 merchant mill building for the Great Lakes Steel Corp., Detroit.

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Monarch Foundry Co., Stockton, Calif., has changed its name to Monarch Foundry & Engineering Corp. Ltd. E. H. Noack is president and general manager and R. E. Noack secretary.

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Superior Universal Products Co., manufacturer of universal joints, Bowling Green, O., through Industrial Plants Corp., will sell its plant, real estate, equipment and fixtures at public auction June 25. Sale will be by lots and not as a whole.

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St. Louis Power Shovel Co., St. Louis, has been awarded a contract to build 16 shovels for the Six Companies Inc., San Francisco, to be used in the construction of division tunnels for the Hoover dam project. The sum involved is $200,000.

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G. W. West Foundry, successor to Grenloch Foundry & Machine Co., Grenloch, N. J., started operating recently after being closed down for over two years. G. W. West is president, Joseph M. Singer, secretary-treasurer and James Brown, superintendent.

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St. Louis Meter & Pump Co., St. Louis, has purchased the operating assets of the St. Louis Pump & Equipment Co. and will consolidate the two plants for the manufacture of gasoline pumps and filling station equipment. The new address is 3701 Forest Park boulevard, St. Louis.

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Tidewater Structural Materials Corp., 79 Madison avenue, New York, now represents the Universal Safety Tread Co., Lowell, Mass., in New York territory. The Tidewater organization recently extended its concrete reinforcing bar fabricating facilities by acquiring the Jersey City plant and warehouse of the Kalman Steel Co.

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Dolomite Inc., Cleveland, and Basic Products Co., Pittsburgh, operating dolomite plants at Maple Grove and Bettsville, O., have been merged as Basic Dolomite Inc. Officers are: President, Howard P. Eells; chairman, George Davidson; vice president, Allen F. Davidson; chairman of executive committee, Dan P. Eells; general superintendent, C. V. Gallagher.

□ □ □

Carnegie Steel Co., Pittsburgh, has commenced the manufacture and sale of T-Tri-Lok steel flooring for bridge floors, grade crossings, heavy duty floors and similar uses. This material is a product of the Tri-Lok Co., Pittsburgh, which will continue to manufacture open steel flooring, safety steps, concrete armoring and T-Tri-Lok for lighter floor construction.

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American Eagle-Lincoln Aircraft Corp., Kansas City, Mo., has purchased at receiver's sale the assets of the American Eagle Aircraft Corp., representing a combination of interests behind the original American Eagle Aircraft Corp. and the Lincoln Aircraft Corp., Lincoln, Nebr. Victor Ross, former president of the Lincoln Aircraft Corp., heads the new company as president and treasurer. It is planned to start operations immediately.

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Fisher Governor Co. Inc., Marshalltown, Iowa, has established a branch at 1015 Santa Fe avenue, Los Angeles, which has been equipped with special machinery and testing equipment. A stock of castings and parts is being built up. Ray McCoy is factory manager. Midwest Piping & Supply Co., 520 Anderson street, Los Angeles, will continue as sales representative. Jasper H. Fisher, chairman of the board, will be active in connection with the new branch. His home is at Santa Monica, Calif.

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American Oxycop Co., formerly at 430 East Woodbridge street, Detroit, has been transferred to 117 Wellington street west, Toronto, Ont. It is planned to open an office and factory in Buffalo for manufacturing gas-flame cutting machines as patented by the Hancock Co., Croydon, Eng. Bradley Machine Co., 430 East Woodbridge street, Detroit, will represent the company in Michigan and Scott-Bansbach Machinery Co., 4607 West Twentieth street, Chicago, in Illinois and Wisconsin.

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Young Radiator Co., Racine, Wis., manufacturer of radiators, condensers, oil coolers and similar equipment, announces a 20 per cent increase in business in the past three months. Additional equipment is being installed for production of copper radiation cabinets and enclosures and car heater equipment is being produced in larger volume. Added demands on the company's engineering department indicate an increase in development and designing requirements on the part of its customers and the department has been enlarged.

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Dorr Co., New York, and Oliver United Filters Inc., San Francisco, have been merged as the Dorr-Oliver Corp. The latter will function through two wholly-owned subsidiaries, a new Dorr Co. Inc. and a new Oliver United Filters Inc. John V. N. Dorr and Edwin L. Oliver will head their respective companies and with their present executive and technical staffs will continue for the present company the business each has individually developed on the basis of his several inventions. The Dorr company has developed equipment for agitation, classification and sedimentation and the Oliver company for filtration.

MIRRORS of MOTORDOM

DETROIT

AUTOMOBILE production appears to be sliding down hill about as fast as it marched up. Considering the United States only, output expanded from 171,851 units in January to 219,939 in February to 276,341 in March to 335,708 in April, now unmistakably seen as the spring peak.

May, on the basis of the National Automobile Chamber of Commerce estimate, for the United States retreated to about 325,000 units. Judging by assembly in the first ten days, June output will fall below 300,000—probably approximating 275,000.

While June had been earmarked for a recession, the curtailment in evidence thus far seems a little more precipitate than had been expected. There are indications that the retrenchment among medium-price car manufacturers will be relatively greater than in other classes.

The race between Chevrolet and Ford continues close. In May, Chevrolet assembled 113,852 units, compared with 106,096 in April. Ford, on the other hand, declined from 117,891 units in April to 102,095 in May. The gap is somewhat wider when it is considered that Ford speaks in terms of world production and Chevrolet for the United States only. Ford output in the United States in May probably was 95,000.

Ford Now Leads Output

By a narrow margin, Ford emerges this week as the leading producer. Still on a 3-day week in most departments at Fordson, daily assembly holds at 7000 units. Chevrolet is assembling 4000 units daily 5 days a week. The weekly score stands: 21,000 for Ford, 20,000 for Chevrolet.

Thus far the Chevrolet rate holds closely to the unofficial schedule of 72,000 passenger and 10,000 commercial cars for June. Ford operations over the near future will be difficult to gage, inasmuch as assembly at the branches will be greater than actual parts production at Fordson will indicate, due to the accumulation of a large inventory.

A number of workers at Fordson, estimated at as high as 15,000, have been laid off, and Murray Body, which has been making Ford bodies, is down to a 3-day week. Chevrolet continues cultivating the retail field intensively, and is driving its sales force to make 1,000,000 personal demonstrations this month.

No official statement has been issued, but Ford is now intimating that Model A will go through the summer and fall substantially unchanged. A lengthening of the wheelbase by several inches and certain body and motor refinements are to be expected it is said. Only time will disclose whether Henry Ford himself has checkmated all the experimentation of the past few months on a light eight and a revised four, but Detroit now looks for revised Fords about October. The summer shutdown at Fordson is now said to be scheduled beginning Aug. 1.

Chrysler, which with Chevrolet has been one of the stalwarts of high production, also is ebbing with the tide. Chrysler proper, still on a 5-day week,

(*Concluded on Page* 94)

◆ Trend of Auto Production Foretold Accurately ◆

HOW accurately the Mirrors of Motordom department of STEEL *traces the trend of automobile production is typified by comparing this department's week-to-week reports for May with the National Automobile Chamber of Commerce production statement for that month.*

For the United States and Canada, the chamber places May output at 338,307 units, which breaks up into between 325,000 and 330,000 for the United States and the remainder for Canada. This is a decline, in total, of about 4 per cent from the department of commerce's report of 335,708 units for the United States and 17,159 for Canada in April. In view of curtailed schedules for June, April clearly is established as the peak month of this spring.

As early as May 7, STEEL *observed that May's showing would be determined by the ability of Chevrolet to wash out an indicated decline by Ford. The fact is that Chevrolet output increased 7756 units, Ford decreased 15,796, the industry as a whole was off 14,560.*

STEEL *said on May 14: "On the basis of the first ten days a total May output of 330,000 units (in the United States) is indicated." On May 21 it reported a decline in the rate of production and observed that "April indeed may prove the top of the spring bulge." On May 28* STEEL *emphasized again: "* * * *May output will be close to April's, probably on the under side."*

And last week, directing attention to the downtrend, STEEL *observed: "While it is conceded that May made a good showing by approximating April's activity, the outlook for June is that a rather general recession is in prospect." Which is being borne out.*

EDITORIAL

Electricity Works Miracles In Steel Industry

TODAY one finds it difficult to picture the steel industry without the services of its faithful handmaiden—electricity. Power, light, heat and control made possible by electric current have revolutionized practically every operation that is involved in the production and utilization of steel.

Many of the iron ore mines at the head of the Great Lakes are electrified. The majority of the large power shovels are electrically driven. The mine hoists are motor driven. Electric locomotives handle ore cars in many of the open-pit mines.

On the lakes most of the ore carriers still depend upon steam engines for propulsion but the first diesel-electric power units have made their appearance. The unloaders at the lower lake docks now are all electrically operated. The ore bridges, skip hoists, transfer cars, bell operating mechanism, blowers, pig casting machines, and practically everything else in a modern blast furnace plant are driven electrically.

In steelworks the mixers, charging machines, ladle cranes, soaking pits, ingot strippers and numerous other items of equipment receive their power through wires instead of pipes. Here also electricity finds a metallurgical use in melting and refining steel. Since 1908 approximately 8,000,000 tons of steel has been produced in electric furnaces in the United States.

Motors Serve Rolling Mills With Two And Half Million Horsepower

But it is in the rolling mills that electricity has found its greatest opportunities for service. Mill motors provide flexibility in speed and power and ease of control which cannot be duplicated by any other means. Without these valuable characteristics many of the more recent developments in continuous mills would have been impossible. Electricity lends itself to the delicate control that is so essential in synchronizing stands in modern installations. Nearly 2000 motors, totaling more than two and one-half million horsepower, today drive America's rolling mills.

In its path from the mills to its final destination in use steel depends on electricity for many services. Fabrication is performed by pneumatic riveting, with compressed air from an electric driven compressor, or by electric welding. All bending, forming and machining operations are performed by electric driven machines. Assembly is aided by electrically operated conveyors.

These miracles of electricity are the more remarkable because they have been wrought in a brief period of time. One does not have to be very old to be able to remember the beginning of applied electricity in industry. In fact, young men who are just approaching the age of 40 can recall the first applications of motors for rolling mill drives. The most important refinements have been witnessed in the past quarter-century, during the life of the Association of Iron and Steel Electrical Engineers. This body, organized in 1907 for the purpose of "advancing the application of electricity and other forms of engineering to the iron and steel and allied industries" has been closely identified with the rapid growth of electricity in industry.

Work of A. I. S. E. E. Covers Broad Field In Steel Mill Engineering

The broad scope of the association's activities is indicated by the work of its committees and the subjects covered in the programs of its annual meetings. Its interests embrace the design, construction and operation of equipment, including cranes, mills, welding apparatus, melting and heating furnaces, etc.; the study of bearings and lubrication, combustion control, insulation, etc.; standardization of many elements in steel mill engineering; promotion of safety and numerous other activities. The association's annual survey of electrical developments in the steel industry is a service of recognized value.

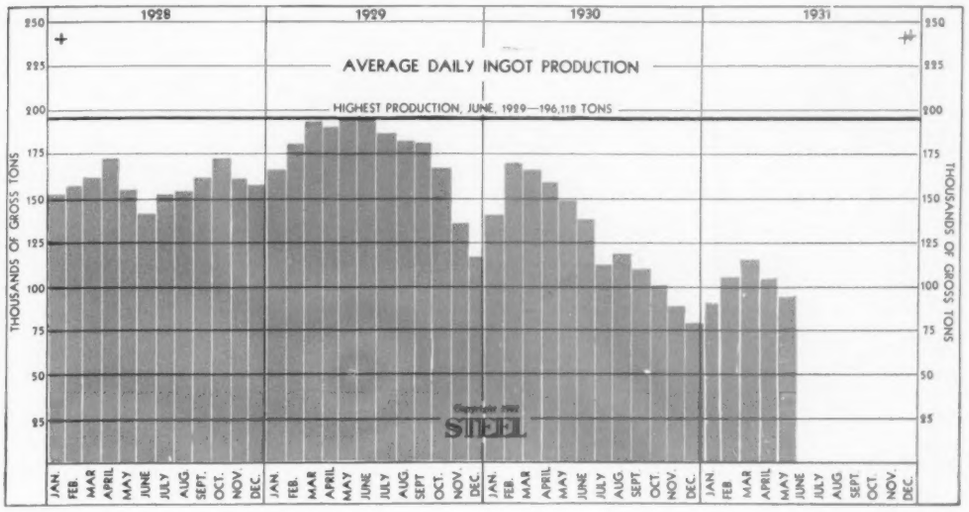
In view of the importance of electricity in steelworks and mill engineering, the annual meeting and exposition of the Association of Iron and Steel Electrical Engineers to be held next week in Cleveland should attract the attention not only of electrical engineers, but of many operating executives, steelworks and rolling mill superintendents, manufacturers and others who are identified with the design, construction or operation of electrical equipment and accessories.

Participation in this meeting is especially important because the necessity of reduced production costs in the steel industry throws an increased burden on those in charge of operations. Electricity already has contributed notable savings in steelmaking and finishing. If additional economies can be found through improved designs and better practice in the use of electricity these further contributions will be doubly welcome to the industry at this time.

THE BUSINESS TREND

1930

May	147,515
April	159,764
March	165,381
Feb.	169,930
Jan.	140,596



1931

May	96,365
April	104,711
March	115,138
Feb.	105,305
Jan.	91,971

Sentiment Improves Despite Lag in Business

LAST week the monotony of gradually declining prices and diminishing industrial activity was broken by several unusual events. Most important from the standpoint of immediate effect on business sentiment was the spurt of heavier trading in the security markets and the pronounced recoveries in industrial stocks. A second factor of importance was the oversubscription of the $800,000,000 government issue, confirming the general belief that the country is flooded with money for safe investment. A third incident, the ultimate effect of which will not be known for some time, was the announcement of Premier Bennett's tariff plan for Canada. Still another development of probable significance was the crystallization of a definite movement for reduction of Germany's payments under the Young plan.

All of these factors are serving the useful purpose of diverting attention from the every-day routine of the present business slump. In spite of the fact that May statistics show moderate recessions from April in the production of pig iron and steel ingots and a continuing decline in commodity prices, business sentiment has improved somewhat.

May Production of Pig Iron and Steel Ingots Is Down as Expected

Daily output of steel ingots in May was 96,365 tons, the smallest average since last January and a drop of nearly 8 per cent from the April daily average. According to the American Iron and Steel institute, operations in May averaged 45.36 per cent of capacity, which checks very closely with the weekly estimates published by STEEL throughout last month.

Pig iron output was down from April by almost 4 per cent, after a four-month period of expanding production. The net loss of eight stacks during May indicates a probable continuance of restricted output throughout the current month. Operations in May were at the rate of 44.7 per cent of capacity.

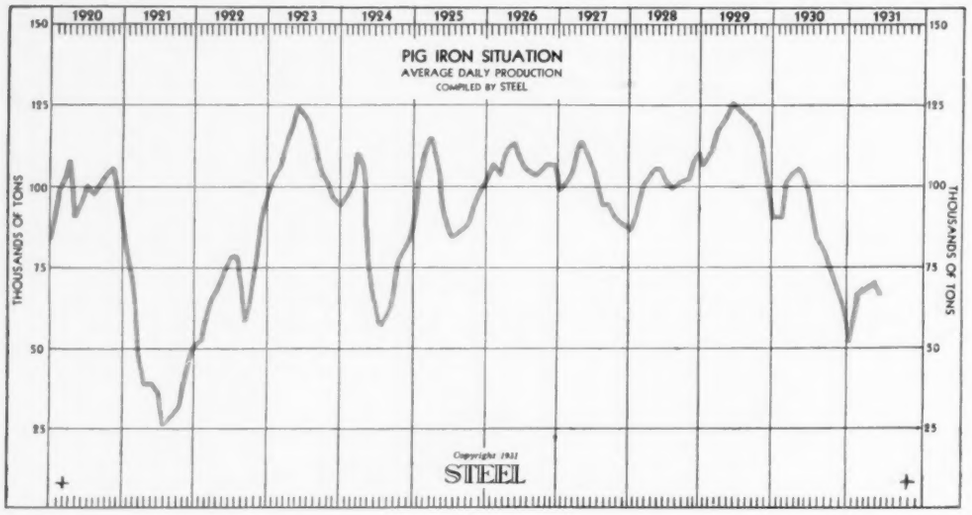
In spite of a slightly improved volume of freight traffic in April, earnings of Class I roads dropped from about $45,000,000 in March to $39,000,000 in the fourth month. Car loadings for the week ending May 23 were up to 755,071, but the total volume for the month will not show as marked a gain over April as was registered in May last year.

Automobile Output Holds Well in May; Commodity Prices Continue Decline

The outlook in the automobile industry is for a slight retrenchment in June, several companies having reduced their schedules for that month. Output of passenger cars held up well throughout May.

Foreign trade in steel continues at low ebb. April exports were lower than in March, but imports gained slightly.

Commodity prices show no indication to depart from their downward trend. Bradstreet's monthly index dropped from $8.91 as of May 1 to $8.64 on June 1, the latter figure being the lowest recorded since June, 1914. Many of the price barometers now are approaching prewar levels. STEEL'S composite of iron and steel prices dropped sharply last week to $31.03, a decline of 30 cents, caused by weakness in pig iron, semi-finished steel, wire and sheets.



	1931	1930
May	64,355	104,564
April	66,986	106,371
March	65,448	104,930
Feb.	61,114	114,942
Jan.	55,337	91,573

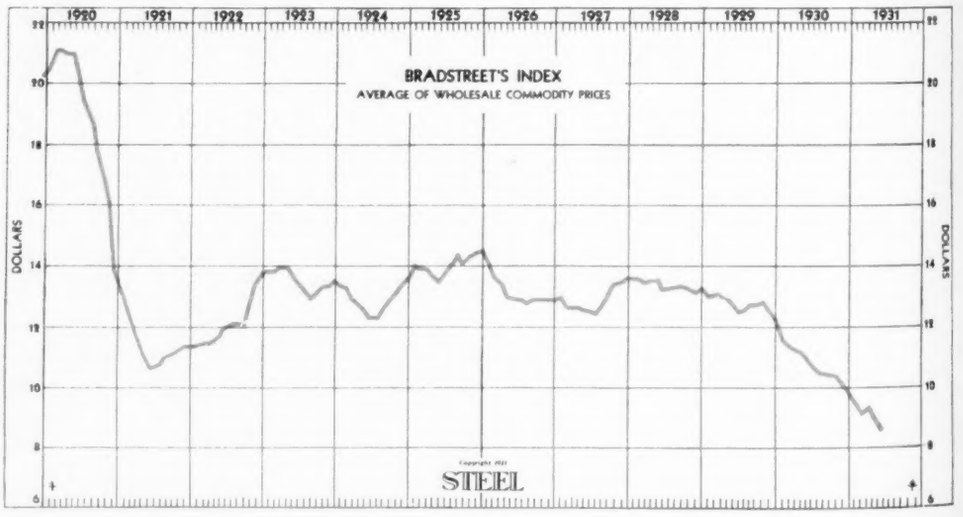
	1930	1929
Dec.	53,732	91,513

Pig Iron Output Lowest for Month Of May Since 1921

Average daily production of pig iron in May was 64,355 tons, against 66,986 tons in the previous month. The drop amounted to 3.9 per cent, and followed four months of rising output. The loss of three furnaces carried over from the end of April and the further decrease of eight last month was responsible for the downward turn. May production in 1930 was 104,564 tons, in 1929 125,753 tons and in 1928 106,219 tons. The last previous low for May was in 1921, when only 39,202 tons were produced. The total production of last month, 1,995,002 tons, was composed of 392,630 tons of merchant iron and 1,602,372 tons of nonmerchant iron. Active furnaces on May 31 were 105.

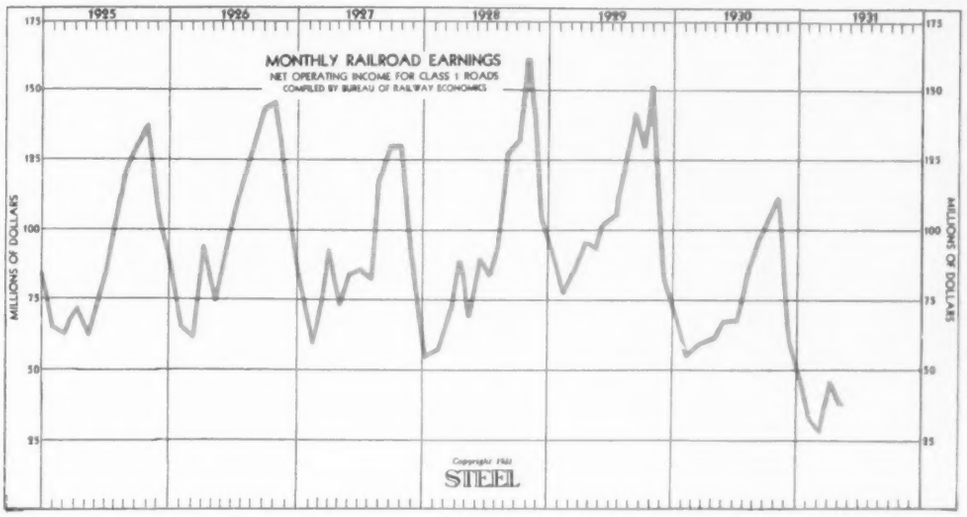
Commodity Price Index Falls to Lowest Point Since June, 1914

Bearing out the weekly declines reported in May, Bradstreet's commodity price index fell once more and as of June 1 stood at $8.64. The loss amounted to about 3 per cent from the composite of $8.91 which prevailed on May 1. April's drop was 3.4 per cent. The current figure is the lowest since June, 1914. The decreases of last month occurred in nine of the thirteen groups, metals being one division which showed the greatest recession. This group dropped from $0.4901 to $0.4681. Coal and coke were among those which remained unchanged. In this respect May was similar to April in that metals declined markedly in both months and coal and coke held firmly.



	1931	1930
June 1	$8.64	$10.77
May 1	8.91	10.94
April 1	9.23	11.18
March 1	9.17	11.22
Feb. 1	9.31	11.51
Jan. 1	9.51	11.68

	1930	1929
Dec. 1	9.84	12.23



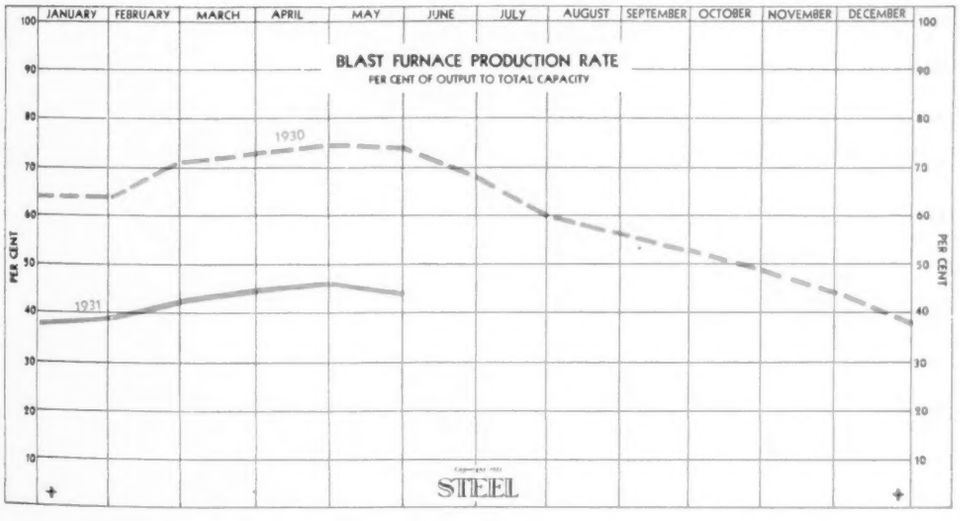
Million Dollars		
April	39.0	62.6
March	45.9	61.2
Feb.	27.2	59.4
Jan.	33.8	55.4
	1930	**1929**
Dec.	49.4	72.2

April Railroad Earnings Slip Back After Seasonal March Gain

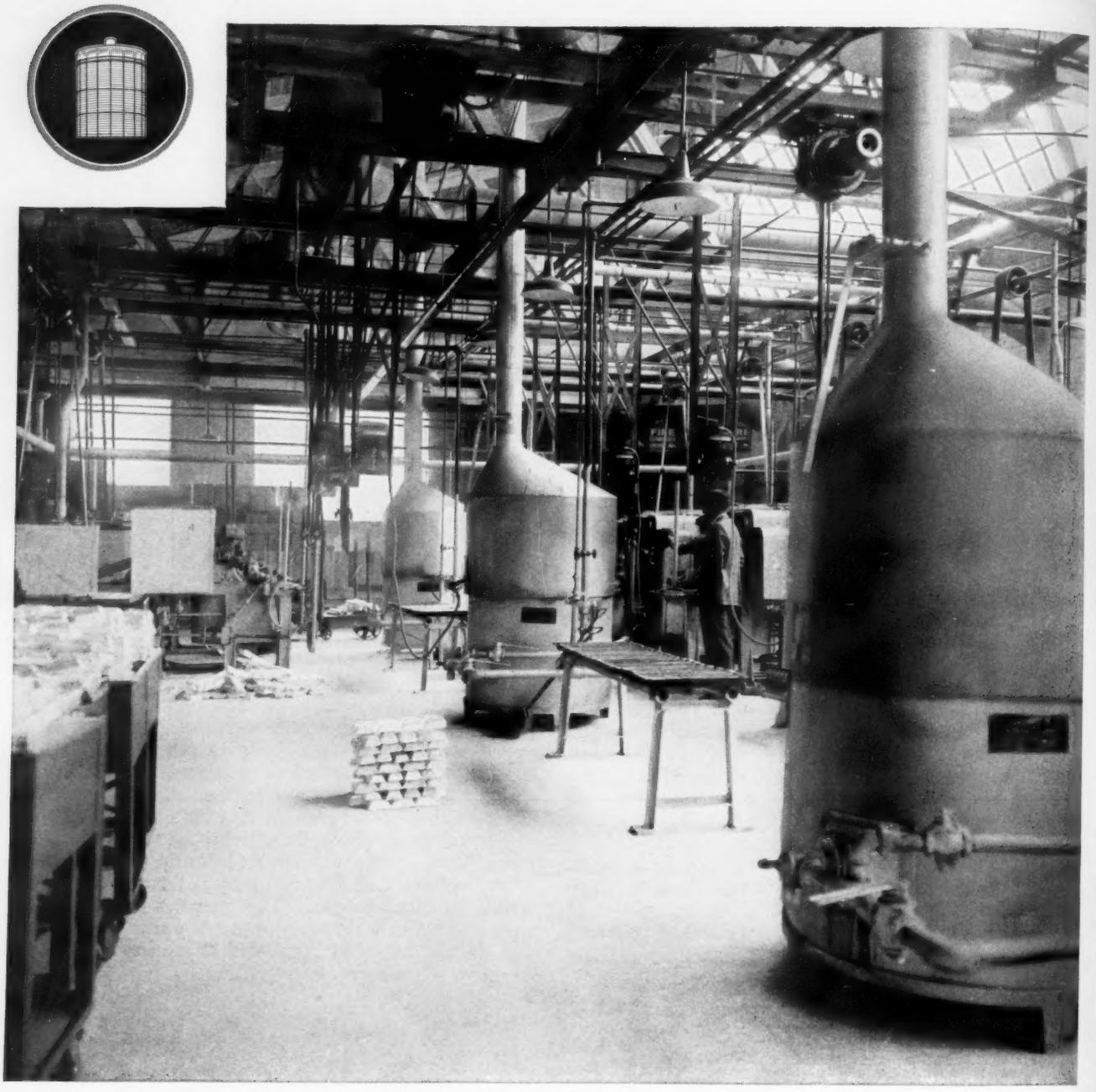
Net operating income of class I railroads fell slightly in April after making in March the first gain in five months. The descent was from $45,905,754 to $39,074,311. A small increase from $61,188,819 to $62,652,307 took place in the corresponding months of 1930. In 1929, a year of still higher earnings, there was a decline from $97,466,476 to $94,204,113. As only a portion of March's gain was sacrificed in April, the annual rate of return on investment rose to 2.11 per cent for the first four months, compared with 2.07 for the first quarter. In four months of 1930 the rate was 3.51 per cent. Forty-five roads operated at a loss in the first four months of 1931.

Net Loss of Eight Furnaces Brings Number in Blast to 105

In relation of production to capacity, May pig iron output was at the rate of 44.7 per cent, the April gain in operations from 45.4 per cent to 46.5 per cent being entirely cancelled. Of the 307 blast furnaces in the United States, 105 were in blast at the end of May. In the steelworks class, the addition of three and the shutting down of nine caused a drop of six and the blowing in of two merchant stacks was accompanied by a blowing out of four. Pennsylvania steelworks furnaces in blast dropped from 37 to 32. Reduced operations in five months of 1931 have resulted in a decrease of 38.5 per cent in output from the 1930 period, the tonnage for five months of this year totaling 9,460,125 tons.



Per Cent		
	1931	**1930**
May	44.7	74.2
April	46.5	75.4
March	45.4	74.5
Feb.	42.5	72.1
Jan.	38.4	65.0
	1930	**1929**
Dec.	38.1	65.5
Nov.	44.1	75.8

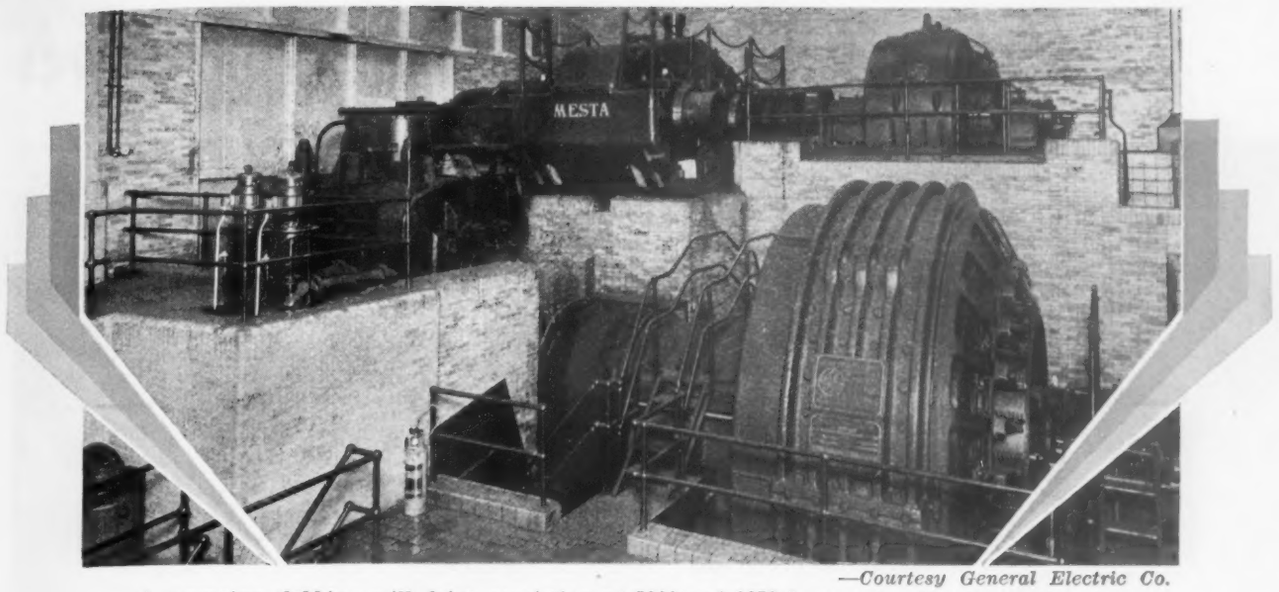


GAS heat is the preferred heat for die-casting. It is adaptable to the nth degree; it puts the heat where it is needed; it is economical; its application is simple. The new illustrated book "Gas Heat in Industry" tells the story. Send for your copy (it's free) today.

AMERICAN *Gas* ASSOCIATION

420 Lexington Avenue, New York

GAS FOR HEAT WHEREVER HEAT IS NEEDED



—Courtesy General Electric Co.

A reversing slabbing mill drive consisting of 7000 and 1650 horsepower direct-current motors

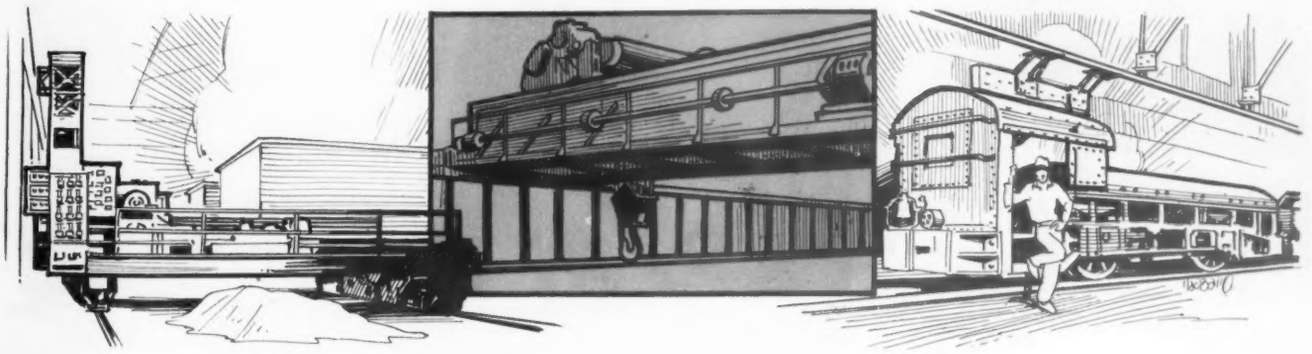
Electric Power in Steelmaking— An Industry Is Transformed

BY E. F. ROSS
Associate Editor, STEEL

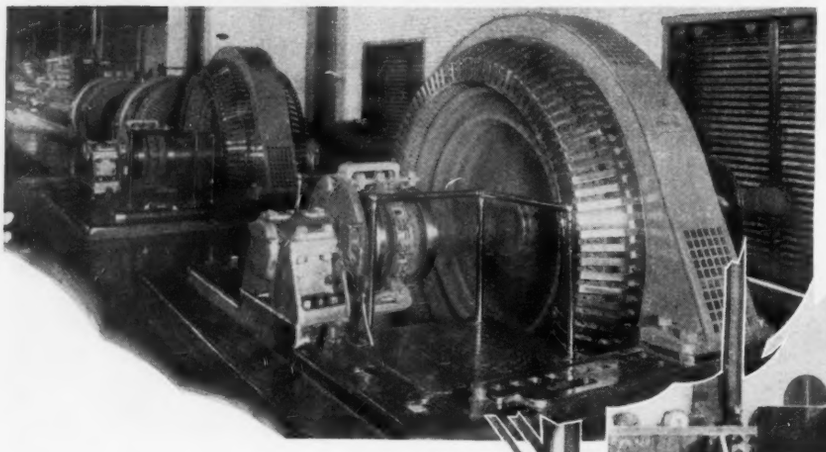
USE of electricity in the steel industry has become so commonplace that we seldom appreciate how difficult it would be to operate a modern mill without the electric motor. For example, can we conceive of operating an overhead traveling crane, a blast furnace, a steel plant or a by-product coke plant with freedom and safety without electric power? Yet, 40 years ago little or no electricity was used in the iron or steel industry; thus in a period of two score years has America's leading industry been completely transformed to the most highly developed in the world.

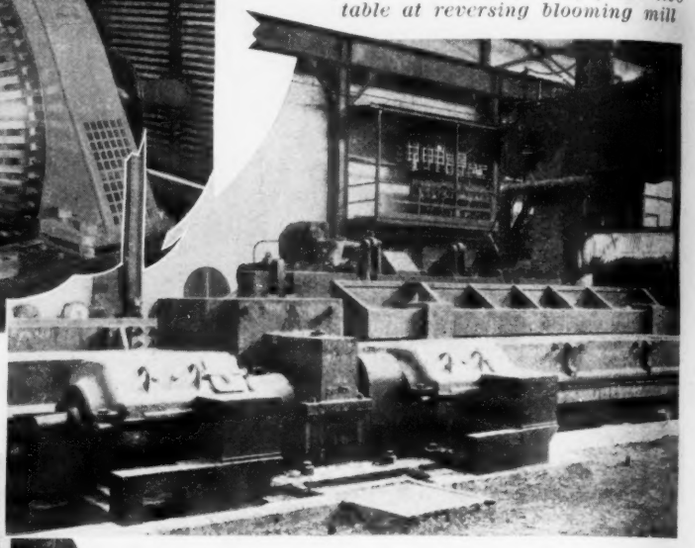
It was in 1891 that the first electric motors were installed in a steel mill. In that year a 37-kilowatt 250-volt direct-current generator and three direct-current motors were installed in the Edgar Thomson works of the Carnegie Steel Co. Other installations soon followed. This same company installed motors for operating cranes at its Homestead works in 1892, and a motor-driven roller table a year later. These were followed in 1895 with the installation of the first mill having all motor-driven roller tables by the Ohio Steel Co.

Two 1500-horsepower direct-current motors to operate the light rail mill at the Edgar Thomson works of the Carnegie Steel Co., installed in 1905, were the initial large motor drives used in rolling mill work. The drive for the 30-inch universal plate mill of the Illinois Steel Co., South Chicago, was the first reversing mill motor equipment built in this country;

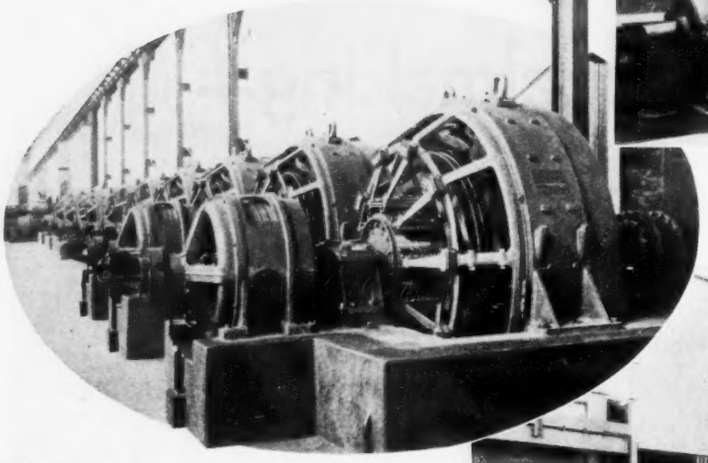


Modern Electrified Rolling Mill Drives





Motor room of 48-inch hot strip mill, showing two 1500-horsepower induction motors, at left. Below, two 150-horsepower direct-current motors in series driving front live table at reversing blooming mill



Photographs Courtesy General Electric Co.

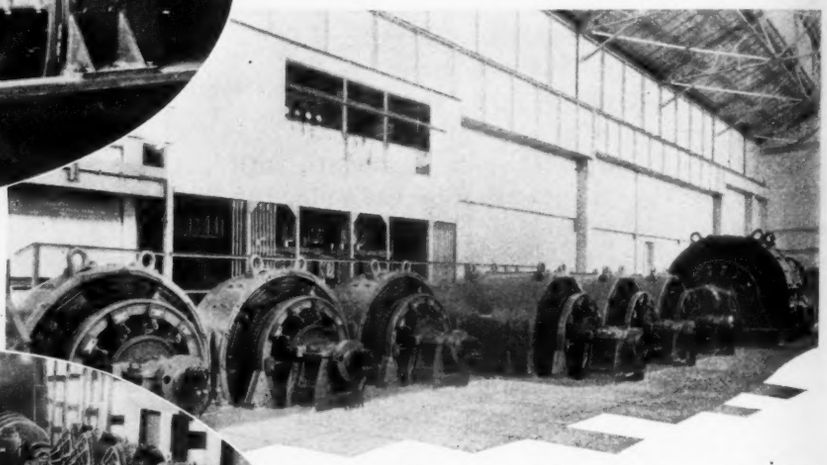
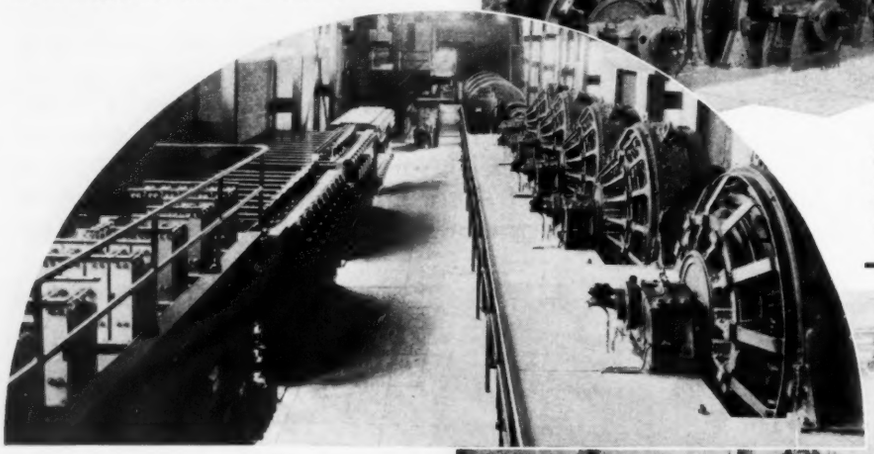
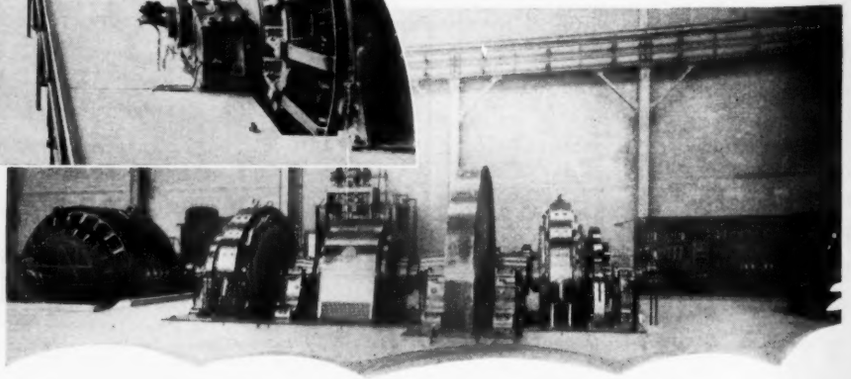


Illustration above shows a line of ten direct-current motors driving a 34-inch strip mill. The two motors in the foreground, driving the finishing stands, are equipped with synchronous generators supplying power to flying shear



Above are shown direct-current motors driving a 10-inch hot strip mill. The six motors driving the finishing stands are mounted on a common bedplate. A 4500-horsepower roughing mill motor is in the background



Switchboards and five direct-current motors in motor room of 21-inch mill, above. At the right is a 4400-kilowatt, 514 revolutions per minute, flywheel motor-generator set, driven by a 3500-horsepower 6600-volt induction motor

Achieve Flexibility and Good Economy

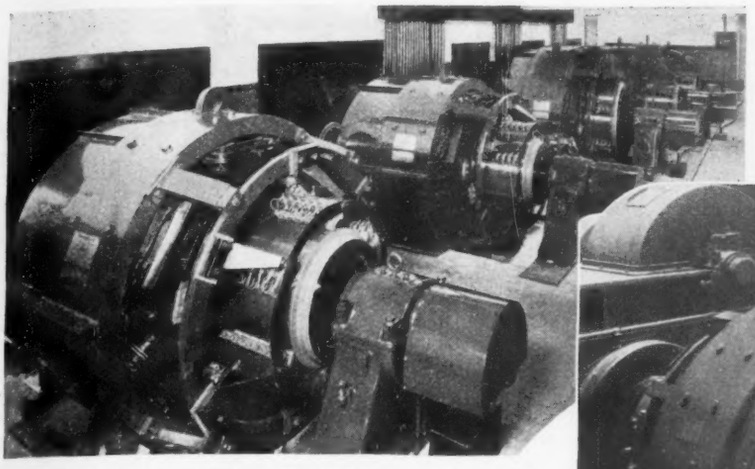
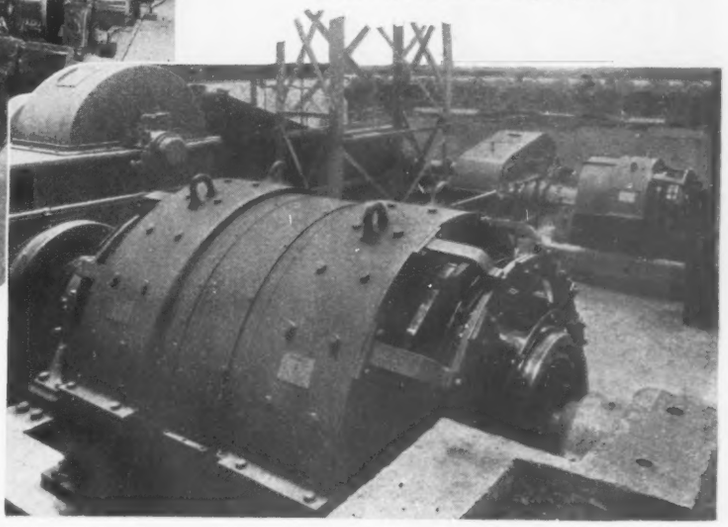
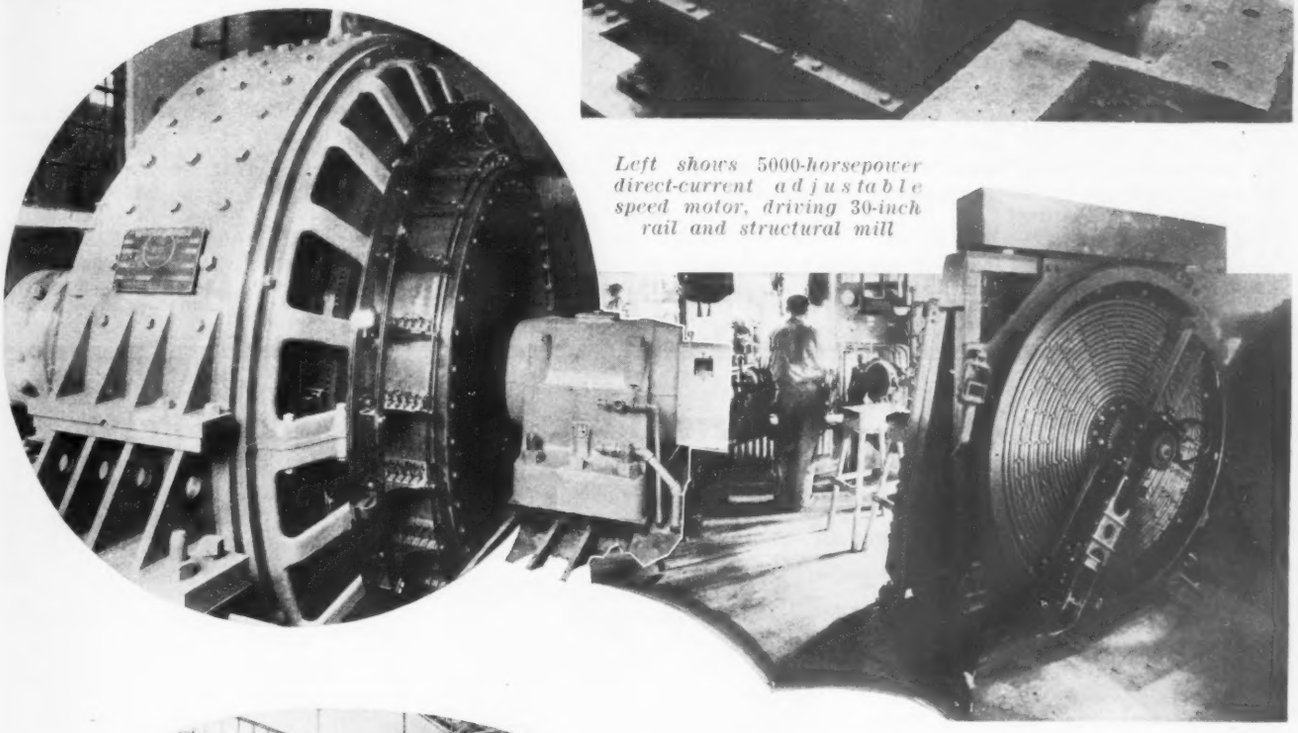


Illustration at the left shows direct-current adjustable speed motors driving the finishing train of a high-speed continuous strip mill. Below are 1200-horsepower and 325-horsepower reversing motors driving main and auxiliary rams of a 900-ton ingot press

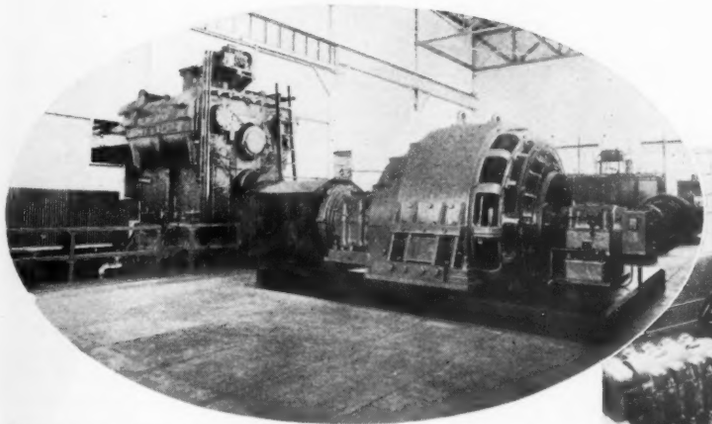


Photographs courtesy Westinghouse Electric & Mfg. Co.

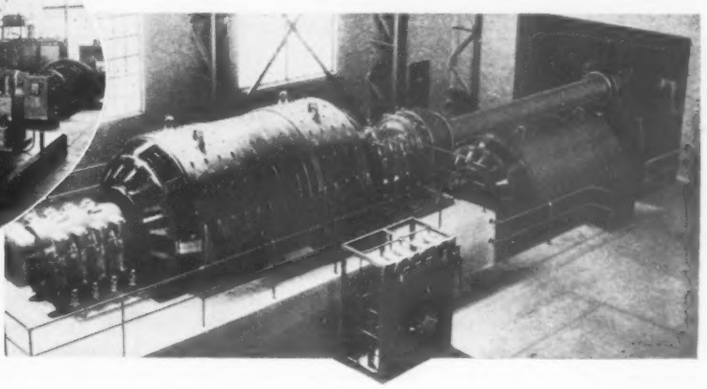


Left shows 5000-horsepower direct-current adjustable speed motor, driving 30-inch rail and structural mill

Above is shown an automatic screwdown control for a 48-inch plate mill. This type of control gives faster operation and increases the accuracy of rolling. Below is a 10,000-horsepower blooming mill drive



Above is a 4000-horsepower, 80/160 revolutions per minute, adjustable speed drive for a 48-inch universal plate mill



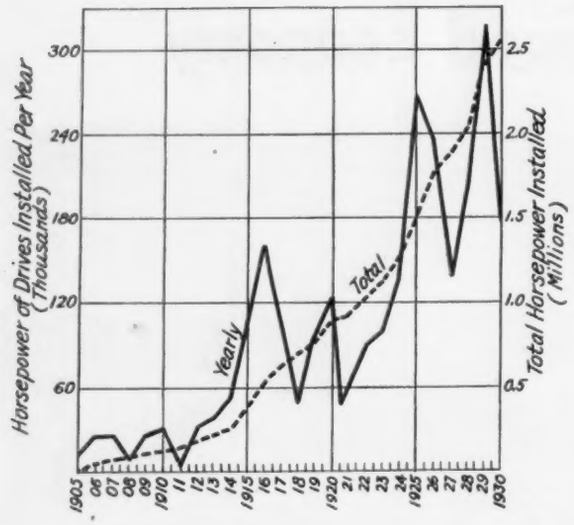


CHART showing yearly and total motor horsepower installed on all types of rolling mills. Solid line represents yearly installations and broken line the total installations. Note the severe drop in new horsepower in 1930 from the high point reached in 1929.

—Courtesy Iron and Steel Engineer

it was installed in 1907. The electrification of the reversing type of mill offered the greatest possibilities regarding economy improvements and it was one of the most difficult problems to solve.

Early Installations Made

Early installations of the induction motor for mill drives were made in 1907, 1908 and 1909, and during this period several large units were designed, most of which were furnished the Illinois Steel Co., Gary mills. In 1913, the Steel Co. of Canada, Hamilton, Ont., installed a motor drive for a blooming mill, billet mill and rod mill; this being the first application of a reversing motor equipment on a blooming mill.

In the early days of electrification, only the direct-current type of motor was employed. The first motors for crane and table service were modifications of standard railway motors and it was not until 1907 that a distinctive mill-type direct-current unit was placed on the market.

Alternating-current induction motors were introduced shortly after and rapidly assumed favor. For many years the direct-current and induction types of motor were used almost exclusively, the choice resting upon the requirements of the installation. In 1925, the Corrigan-McKinney Steel Co., Cleveland, purchased the first really large synchronous motor for main roll service, a 9000 horsepower unit, and since that time this type of motor has very largely superseded the induction motor, except of course where flywheels are necessary.

A recent tabulation shows 1900 motors, ranging from 300 to 9000 horsepower and aggregating approximately 2,550,000 horsepower driving American rolls. In 1929 the record year in electrification, 201 new main roll drives totaling some 313,000 horsepower were installed. In 1930, only 109 new drives totaling 158,440 horsepower were completed.

Remarkable Cost Reductions

Electrification has become an effective tool in reducing manufacturing costs to meet the new economic conditions now existing. About 10 years ago it was estimated that an electrified plant had an advantage of $2.50 a ton of steel over a steam plant. Today, that difference is greater, but if this advantage were applied to the normal output of steel in the United States, it would effect a saving of $125,000,000 annually.

Advantages of electricity are: (1) It provides a most economical and practical method of generating power; (2) it provides an economical and convenient means of power distribution; and (3) it reduces maintenance.

Iron and Steel Engineers Seek Standards and Safety

SINCE its organization nearly a quarter of a century ago the Association of Iron and Steel Electrical Engineers has concerned its activities with electrical and allied problems of the iron and steel industry and in this field many unusual and interesting questions have presented themselves, according to F. O. Schnure, electrical superintendent, Bethlehem Steel Co., Sparrows Point, Md., and president, Association of Iron and Steel Electrical Engineers.

Starting with the development of a rugged mill-type motor and control to replace the railway equipment first applied to steel mill drives the association has drafted specifications covering practically all classes of electrical devices used in mills today. By means of discussion in periodic section meetings, symposiums, and conventions many valuable ideas have been advanced to theorists and designers, who have been so instrumental in the mechanization of industry.

The association early recognized the importance of the human factor, safety, in steel mill operation and the promotion of safety rules and regulations together with the organization of a safety section have helped to keep this factor in step with the rapid progress in equipment design.

F. O. Schnure

In the same manner combustion and lubrication problems have claimed the interest of the association because of their close alliance with the many types of electrical devices in steel mills.

Development and application of motors, controls, bearings, etc., have demanded standardization, and recognizing this need the association has organized standardization committees to work in co-operation with manufacturers with the aim of bringing about some uniformity in the products of various builders of equipment.

In general, correlation and presentation of all information of value to the electrical phase of the iron and steel industry has been the objective toward which the Association of Iron and Steel Electrical Engineers has directed its efforts.

MESTA AUTOMATIC PLATE VALVES (IVERSEN PATENT)

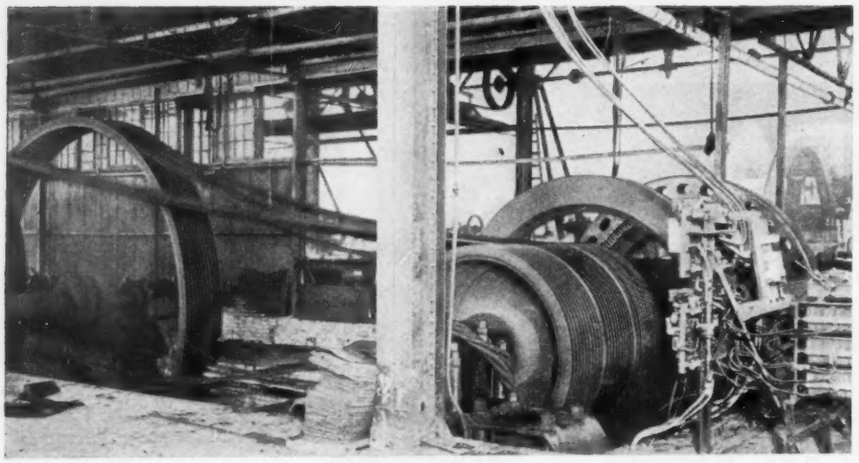
MESTA Automatic Plate Valves and Check Valves, made under the "IVERSEN PATENT," range in size from 2" to 16" in diameter. The success of this Valve is due to its simplicity and durability, the selection of special materials entering into the construction of its few component parts and the extreme care of manufacturing and assembling.

The highest possible efficiency is obtained by this valve. The standardization of parts has made it the standard of all blowing engine automatic plate valves and has led to its universal adoption for blast furnace blowing engines as well as for compressors and vacuum pumps.

MESTA MACHINE COMPANY

Pittsburgh, Pa.

Mesta



—*Courtesy General Electric Co.*

Just by way of contrast with modern mill motors—this shows an early 550-volt induction motor, control, and rope drive for the cold rolls of a sheet mill

nance, repairs and attendance charges and requires less supplies.

The power is generated in a central station and is easily transmitted even to distant points of application with relatively small loss. Other forms of power can be transmitted economically only in limited areas. Sufficient potential energy in the form of waste gases and of waste heat usually is available in steel plants to develop all or a large part of the power required not only to produce steel but to roll it into finished shapes.

It is difficult to determine what has been electricity's greatest contribution to the steel industry, but certainly one important one is that of providing a means for economically utilizing waste blast furnace gas.

The electric motor for mill drive does what the steam engine did and it does also what was impossible for the engine—it gives a rotary instead of a reciprocating source of power. There is less wear and tear, decreased repair, greater ease and flexibility of control, all of which results in increased output at lower cost. Ability to measure accurately not only the total power consumed by a mill over an extended period, but to analyze the power of each pass; has made it possible to study every detail of the power requirements for rolling steel.

Applications Are Numerous

Applications of electric power in the iron and steel industry are too numerous to enumerate them all, however, a summary of the more important ones will serve to illustrate how electrification has progressed and how it has practically revolutionized former practice.

For general application in an iron and steel plant, electricity is used for illumination; communication, including telephones, signalling and call systems; cranes and hoists; transportation, including locomotives, tractors and industrial trucks; elevators; conveyors; air compressors; water and oil pumps; lubrication

(*Concluded on Page* 43)

Electrical Engineer Becoming More Important in Steel Industry

WORKING together, steel mill engineers and electrical manufacturers have given American steelmaking the distinction of being one of the most highly developed industries in the world. Functions of the steelworks electrical engineer are twofold; one is the maintenance and operation of the works, the other is the generation and distribution of power.

Attention is focused on this subject just at this time because of the annual convention and exposition of the Association of Iron and Steel Electrical Engineers to be held in Cleveland, June 15-19. Several hundred engineers will participate in the sessions which are designed to benefit the iron and steel industry.

New Responsibilities

The electrical engineer constantly is becoming a more important factor in the steel industry, for in his province are merged responsibilities formerly lodged with the master mechanic and others. Fundamentally, he must have the knowledge and resourcefulness of the mechanical engineer—this being demonstrated by the fact that 75 per cent of motor troubles occur in the motor bearings. Commutator troubles are second in the percentage scale and electrical troubles are infrequent.

He must be schooled thoroughly as an electrical engineer and he must keep acquainted with the progress made by other branches of science. From the telephone engineer, he may be obliged to employ the discoveries with respect to transmitting many messages over one line. From the radio engineer, he must be prepared to derive the benefits of the vacuum tube and photoelectric cell in devising controls using either visible or invisible beams. Lubrication and design of bearings, electric welding, illumination, and many other operations as well are involved in the electrical engineer's duties.

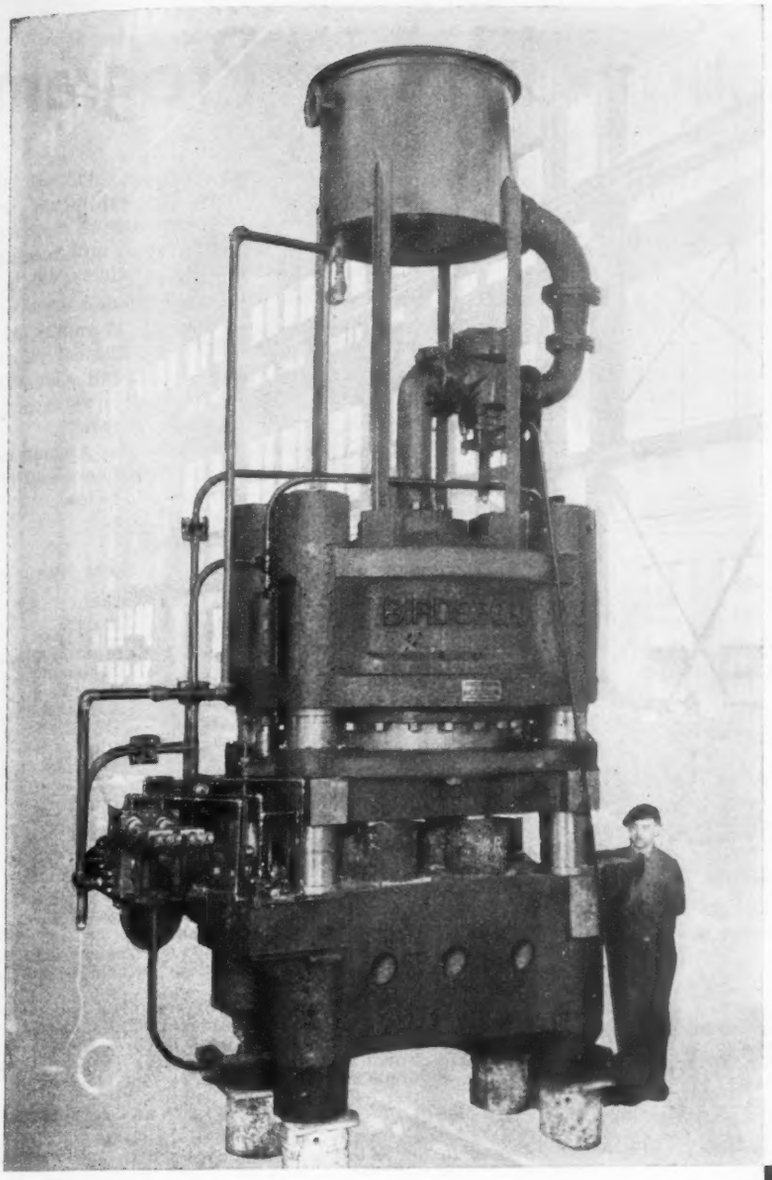
Broad View of Job

And by no means least, he must possess considerable ability to get along with men, both superior and subordinate. Only too frequently does friction arise between the operating and electrical departments, so that a broad view beyond his immediate job is necessary.

To meet the challenge of rapidly changing conditions, a steelworks electrical engineer must be a thoroughly rounded out individual. Many have succeeded so well in their line of work that they are today holding executive positions. It would not be difficult to cite an imposing list of steel plant officials who have achieved success and prominence using their electrical engineering service as a stepping stone to greater responsibilities.

—*Courtesy Westinghouse Electric & Mfg. Co.*

Shop view of one of two 800-horsepower vertical direct-current motors to drive vertical stands of continuous bar mill, eliminating bevel gears customary with horizontal motor drive



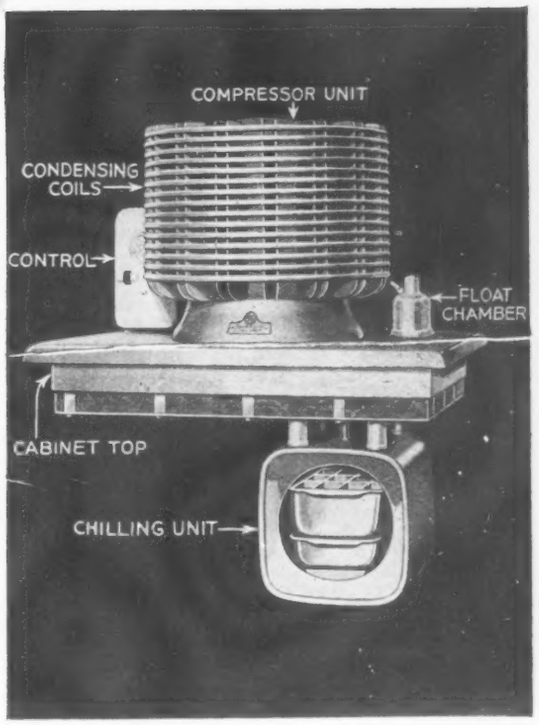
Power Press Yields to Hydraulic in Efficient Manufacturing

GENERAL ELECTRIC'S frosty chilling unit may excite the feminine appeal through a hasty trial of frozen custard via N.B.C. network . . . or hubby's delight in the old ice-pick racket at a late hour. However, if hubby's daytime responsibility rests upon production (technically), we've some inside dope for him.

The outer shell of G.E's evaporator is now corrugated with a single stroke on Birdsboro's 1500 ton hydraulic forming press, previously performed on a power press with the *fifth* stroke of the head . . . A saving of time and labor where built up pressure is most practical.

Birdsboro's hydraulic engineers have developed many problems of the manufacturer . . . their experience covering a wide scope . . . Have you a new field to conquer?

BIRDSBORO
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA



Mill Electrification Heads Program

ELECTRICAL developments, safety, lubrication and combustion are main subdivisions of the technical program of the Association of Iron and Steel Electrical Engineers which is holding its annual convention and exposition in Public Auditorium, Cleveland, June 15-19. Technical sessions are to be held at the auditorium the first four days of the meeting, with the fifth day given over to an inspection trip to Akron, O., where the new dirigible being built by the Goodyear Tire & Rubber Co. will be inspected.

The exposition of iron and steel products and equipment will be open during the five days of the convention. Approximately 125 exhibitors have reserved space for exhibiting the newest designs and developments in electrical control apparatus, bearings, steel mill machinery, lubricants, metals, metal products, etc.

The Wire association, an affiliated organization, will hold meetings June 16, 17 and 18, during which time a number of technical papers dealing with wire manufacture and wire mill operation will be presented, and several pertinent motion pictures will be shown.

Detailed programs for both the Association of Iron and Steel Electrical Engineers and the Wire association are presented below.

Association of Iron and Steel Electrical Engineers

Monday, June 15

MORNING

Registration and business session.

General Technical Session

"Electrical Developments in the Iron and Steel Industry," by W. H. Burr, electrical superintendent, Lukens Steel Co., Coatesville, Pa.

"Research Covering Alternating-Current Arc Welding," by Grover A. Hughes, electrical engineer, and R. C. McBride, chemist, Truscon Steel Co., Youngstown, O.

"Standardized Symbols for Control Apparatus," report by a special committee on control apparatus.

AFTERNOON

Safety and Electrical Engineering Division

" 'Controlled Conditions' Plant," by H. E. Stitt, the Austin Co., Cleveland.

"The Application of Health Lamps to the Iron and Steel Industry with Respect to Health and Efficiency," by M. J. Dorcas, National Carbon Co., Cleveland, and L. C. Porter, Nela Park works, General Electric Co., Cleveland.

EVENING

Iron and steel exposition officially opens.

Informal reception for members, exhibitors and guests.

Tuesday, June 16

MORNING

Bearings and Mill Drives

Report of the special committee on bearings, by general chairman F. D. Egan, electrical superintendent, Bethlehem Steel Co., Lackawanna, N. Y.

"Motor and Control Equipment for Cold Strip Mill Drives," by F. Mohler, industrial engineering department, General Electric Co., Schenectady, N. Y.

"Twin Motor Drive," by R. H. Wright and H. E. Stokes, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wednesday, June 17

MORNING

Electrical Engineering Division

"A Description of the Electrical Installations Located at the Fairfield Plant of the Tennessee Coal, Iron & Railroad Co.," by Emmett Harrell, electrical superintendent, Fairfield plant, Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.

"Conductors of Heavy Alternating Currents," by D. I. Bohn, electrical engineer, Aluminum Co. of America, Pittsburgh, and H. W. Pabst, engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Combustion Engineering Division

"Practical Side of Metallurgical Heating Application," by Harry Dobrin, consulting fuel engineer, Pittsburgh.

"Combustion Control of Open-Hearth Furnaces," by Martin J. Conway, combustion engineer, Lukens Steel Co., Coatesville, Pa.

AFTERNOON

Combustion Symposium

"Electrical vs. Mechanical Devices Used in Combustion Control of Open-Hearth Furnaces." Participating: J. F. Shadgen, Smoot Engineering Corp., New York; G. D. Conlee, Republic Flow Meters Co., Chicago; P. S. Dickey, Bailey Meter Co., Cleveland; W. H. Shallcross, Shallcross Control Systems Co., Milwaukee; R. W. Simpson, American Heat Economy bureau, Pittsburgh; M. J. Bradley and B. F. Keene, Leeds & Northrup Co., Philadelphia.

Thursday, June 18

MORNING

Lubrication Engineering Division

A discussion covering the questionnaire sent by the lubrication engineering committee of the association to the iron and steel industry in connection with steel mill lubrication practices.

"Crane Lubrication," by T. J. Flaherty, electrical superintendent, American Rolling Mill Co., Ashland, Ky.

"Lubrication of Electrical Apparatus Used in Steel Mills," by J. L. Brown, mechanical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

AFTERNOON

Lubrication Engineering Division

"Lubrication of Machine Tools," by J. H. Van Campen, chief engineer, Republic Steel Corp., Youngstown, O.

"Lubrication of Turbogenerators," by James L. Roberts, assistant installation engineer, turbine department, General Electric Co., Schenectady, N. Y.

"Testing of Lubricants," by Frank L. Gray, lubrication engineer, Illinois Steel Co., Gary, Ind.

"Testing of Lubricants," by E. S. Glauch, mechanical engineer, Joseph Dixon Crucible Co., Jersey City, N. J.

EVENING

Formal reception, entertainment and dance.

Friday, June 19

Inspection trip to the Goodyear Tire & Rubber Co. power plants, inspection of the new dirigible, U. S. S. AKRON, mooring dock, etc.

Exposition is open Monday, 1:30 to 10 p.m.; Tuesday, 1:30 to 5:30 p.m.; Wednesday, 1:30 to 5:30 p.m.; Thursday, 1:30 to 10:00 p.m.; and Friday, 9:30 a.m. to 10:00 p.m.

Wire Association

Tuesday, June 16

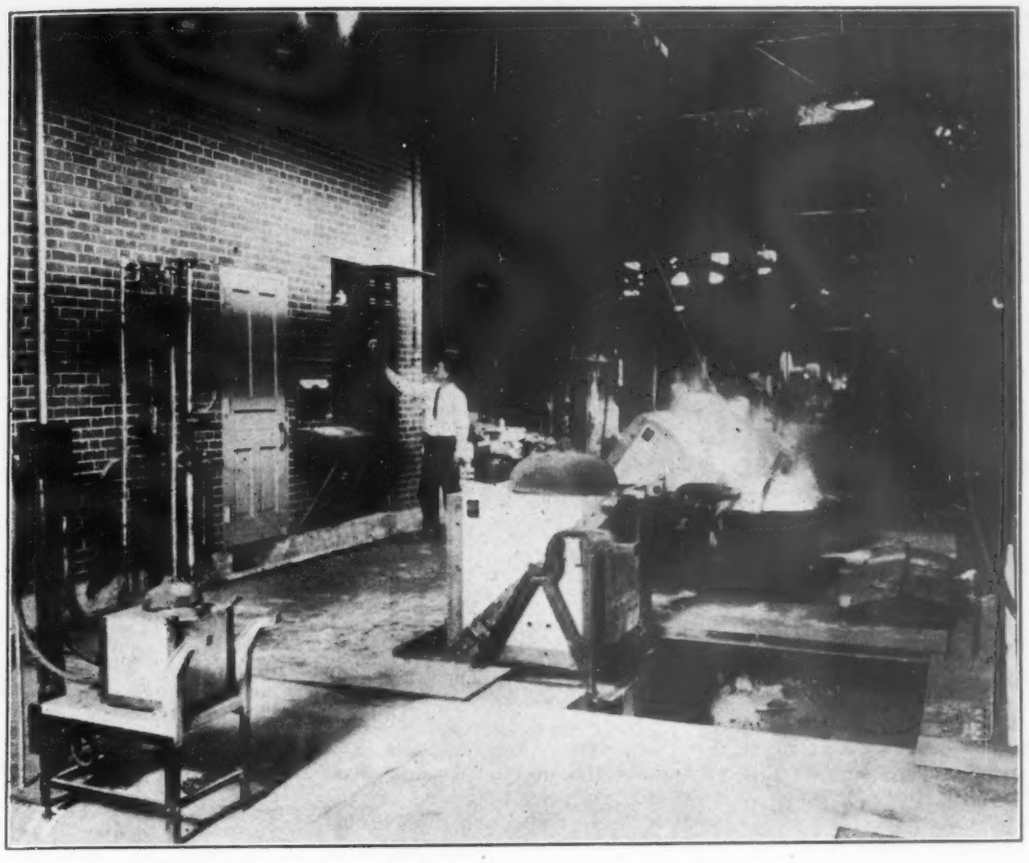
"History of Wire Industry," by Kenneth B. Lewis, Morgan Construction Co., Worcester, Mass.

"Heat Treating," by Joseph A. Doyle, vice president, W. S. Rockwell Co., New York.

"Bright Annealing and Galvanizing," by W. H. Spowers Jr., consulting galvanizing engineer.

"Rust Protection of Wire Products with Cadmium," by Clayton M. Hoff, engineer, Grasselli Chemical Co., Cleveland.

Two motion pictures, showing the manufacture of rods,



Battery of AJAX-NORTHRUP Furnaces at Lebanon Steel Foundry.

AJAX NORTHRUP

CORELESS INDUCTION FURNACES

FOR

HIGHEST QUALITY ALLOY AND STAINLESS STEELS

VISIT US AT BOOTH NO. 120
IRON AND STEEL EXPOSITION

Ajax Electrothermic Corporation
Trenton, New Jersey

G. H. CLAMER . . President and General Manager

E. F. NORTHRUP . . Vice President and Technical Adviser

rails, etc.; and the manufacture of steel wire products.

Wednesday, June 17

"Wire Mill Management," by E. G. Brown, assistant factory manager, U. S. Rubber Co., Bristol, R. I.

"Wire Mill Cost Accounting," by L. D. Granger, assistant to the vice president and chief metallurgist, Wickwire Spencer Steel Co., New York.

"Lubrication," by R. T. Kline, lubricating engineer, J. T. Robertson Co., Syracuse, N. Y.

"Lubrication and Application of Tungsten Carbide Dies," by C. R. Longwell, engineer, Carboloy Co., Newark, N. J.

Motion picture showing in detail the processes involved in laying submarine cables.

Thursday, June 18

"Some Phases of Insulating Work," by P. O. Reyneau, Western Electric Co., New York.

"Manufacture of Insulated Wire and Cable," by J. W. Hackett, Okonite Co., Passaic, N. J.

"The Story of the Fabrication of Copper," a motion picture prepared by the American Smelting & Refining Co., New York.

"The Manufacture of Wire Rope," a motion picture of the technical processes of John A. Roebling's Sons Co., Trenton, N. J.

Association Aims at Development of Engineer for Steel Plant Service

BY JOHN F. KELLY, Managing Director
Association of Iron and Steel Electrical Engineers

ORGANIZED in 1907 by a group of 28 engineers, the Association of Iron and Steel Electrical Engineers had as its original purpose "the advancement of the application of electricity to the iron and steel and allied industries." Later this was changed to read: "The advancement of the application of electricity and other forms of engineering to the iron and steel and allied industries."

Today and in its broadcast sense the aim of the association is the development of the engineer for steel plant service. The means employed to attain this end include monthly meetings in various steel mill centers; the preparation and discussion of topics and papers directly related to steel mill practices; the preparation of codes, specifications and guides covering steel mill equipment; numerous inspection trips to the modern steel plants; and the dissemination of engineering information to the iron and steel industry in general.

The association functions through five engineering divisions and 23 national committees, all of which are concerned with the development in all lines of equipment, calculated to encourage a more liberal profit in products of steel.

Each year the association conducts an iron and steel exposition in some prominent steel mill center such as Buffalo, Pittsburgh,, Cleveland, etc., one of the objects of this exhibition being to acquaint executives and engineers in the industry with the status of the engineering arts with reference to the various lines of steel mill equipment used in the iron and steel industry. The exposition enables these executives and engineers to obtain a full appreciation of the improvements made in mill equipment with each succeeding year.

W. H. Burr

Electrical Developments Are Surveyed Annually

By W. H. Burr

Chairman of the electrical developments committee, and electrical superintendent, Lukens Steel Co., Coatesville, Pa.

WHEN the electrical developments committee of the Association of Iron and Steel Electrical Engineers was organized its principal function was to present at the annual convention a review of the steel mill main drives which had been electrified and the electrically driven mills which had been installed during the year, together with developments in electrical equipment which it was thought would be of interest to the steel industry.

Subsequently engineering magazines began to feature yearly developments in various industries in the first issue of the following year; whereupon this committee co-operated with the *Iron and Steel Engineer*, the publication of the association, and manufacturers of steel mill equipment in the presentation of the first complete record of all the electrified main roll drives of 300 horsepower and over in the United States. This record has been revised annually and from this information curves have been plotted which show the horsepower installed on main roll drives on all mills and also on various types of mills each year since the first motor was applied to a main drive in the steel industry.

From its past history it appears likely that the electrical developments committee, with the co-operation of the builders of steel mill equipment, will be of even greater service to the steel industry in the future than it has been in the years which are now history.

Combustion Division Seeks Better Use of Fuels

By Walter Flanagan

Chairman of the combustion engineering division, and special engineer, Carnegie Steel Co., Pittsburgh.

THE purpose of the combustion engineering division of the Association of Iron and Steel Electrical Engineers is to provide an opportunity for meeting together of combustiion engineers to discuss methods of attacking and solving the problems which arise from the varied fuels

Walter Flanagan

and

discuss

STRONGER WELDS

"I'm convinced that if we can outweld all welders on strength of welds and toot our horn about such super-strength, it will prove a leadership story for us."

"That's easy in all cases except where we run up against people using Lincoln's 'Shielded Arc' processes, the 'Electronic Tornado' (automatic) and 'Fleetweld' (manual)."

"Well, can't we use some process that has the edge over them—even if it's only a little bit?"

"No, I've been hot on the trail of every new trend in arc welding and here are some figures on comparative tensile tests, each made in a different shop."

"SHIELDED ARC" WELDS	UNSHIELDED ARC WELDS
(a) 65,600 lbs. per square in.	42,700
(b) 67,300	44,300
(c) 69,100	48,500
(d) 72,000	55,400
(e) 75,100	56,100

"Yes, but have you figures on the costs —on the ductility?"

"Not on that test; but if you would like such figures there are rafts of them in a book of comparative tests giving figures, photos and facts of 'Shielded Arc's' lower cost, greater ductility and greater strength; get a copy by writing to

LINCOLN

THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO

Largest Manufacturers of Arc Welding Equipment in the World

W-180

When you use AIR

get its full economies

YOU can profit by the experience of other forgers, who have made careful tests to find the most economical hammer for use with air.

Two of the largest companies in America proved, by tests in their own forge shops, that ERIE hammers with the new *ring-type valve* can give—

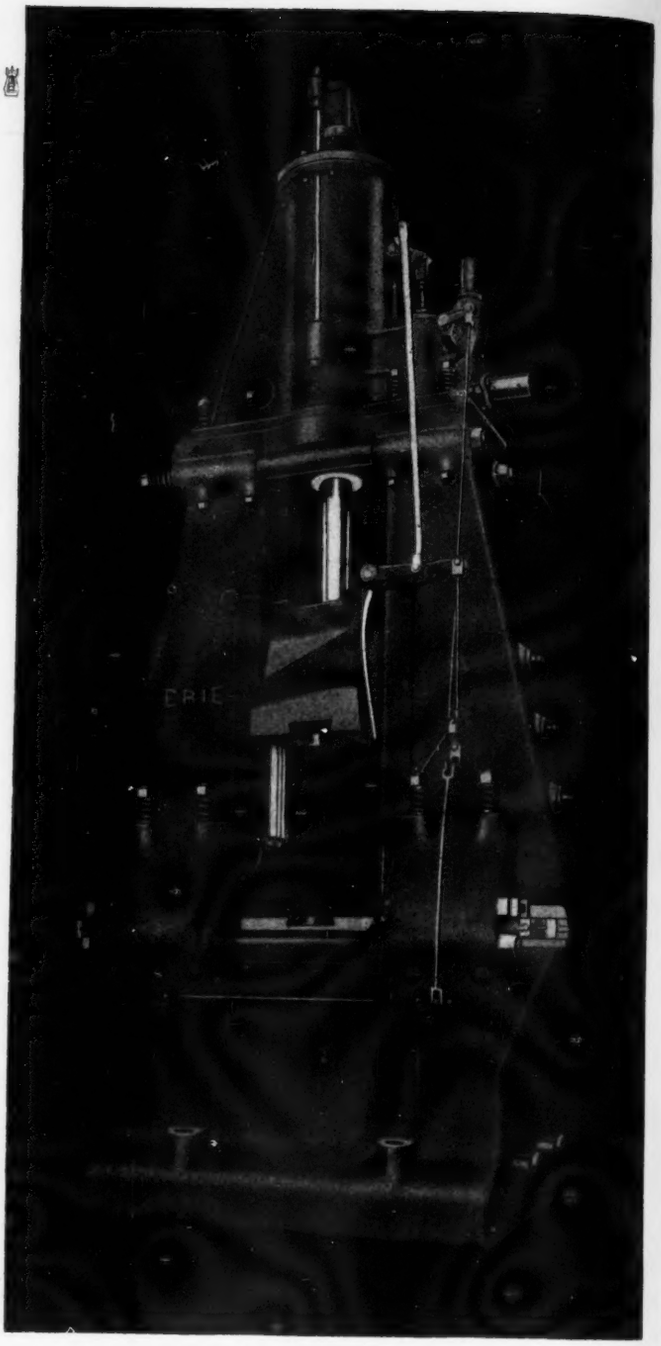
25% saving in air consumption:

In a 2-hour test with flow-meter, with the hammer swinging its maximum automatic stroke, one ERIE showed a 25% saving in air.

Another test, run by one of the world's largest machinery manufacturers, showed an even higher percentage of air saving with the hammer swinging its minimum automatic stroke.

Our engineers will be glad to help you estimate the savings you may reasonably expect with an ERIE Hammer, whether operated by Air—Steam—Electricity.

Write us.



Forgers are saving air or steam, and stepping up production, with the improved ERIE ring-type motion valve. Bores and motion valves are hone-finished. The exceptionally efficient valve design, and accuracy of construction, represent the high standard maintained right through the ERIE Hammer.

ERIE FOUNDRY COMPANY

Erie, Pa.

STEAM DROP HAMMERS—BOARD DROP HAMMERS
SINGLE AND DOUBLE FRAME FORGING HAMMERS
TRIMMING PRESSES—TOOL DRESSING HAMMERS

INDIANAPOLIS: 335 POSTAL STATION BLDG. CHICAGO: 549 WASHINGTON BLVD. DETROIT: 335 CURTIS BLDG.
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357

and multitudinous applications that are encountered.

A study of the costs of producing steel will reveal that the direct charges on the books for fuel amount to a large percentage of the total expense. However, aside from the cost factor the quality of the finished product also depends strongly upon the proper use of fuel.

The fuel cost of a finished product is not merely the price paid for so many heat units, but also the loss of material charged, repairs to equipment and general increased cost of production caused by anything less than perfect application of the fuel.

In no other industry is so wide a range of fuels encountered with so many varied applications. These include coal, coke, coke breeze, coke oven gas, tar, pitch, natural gas, blast furnace gas, producer gas and fuel oil, to mention a few.

The combustion engineer in the steel industry has widely varied problems to wrestle with, mostly of the first magnitude. Still, a review of the situation indicates no other concerted effort to bring together the combustion engineers to solve or to assist in solving the fuel problems of the industry save that promoted by the combustion engineering division.

Lubrication Division Aids Mill Operators

By C. C. Pecu

Chairman of the lubrication division, and lubrication engineer, Bethlehem Steel Co., Lackawanna, N. Y.

THE lubrication division of the Association of Iron and Steel Electrical Engineers aims to assist in bringing to the front in the iron and steel industry the importance of proper lubrication to all types of machinery.

Through its several agencies for publicity the division presents informative articles on lubrication covering all departments of steel mill work. Through the many district meetings which are held each year a wide variety of papers is presented and discussed, dealing with lubrication problems. At the annual iron and steel expositions, numerous devices for lubricating machinery occupy prominent positions.

The lubrication division desires to lead the designers and manufacturers of mill machinery, the operators of this machinery and the manufacturers of lubricants into one common mind on the subject of lubrication. In other words, the main object is continually to agitate the subject of lubrication, with a view to bringing out the following results: The best design of machinery; the best quality of lubricants; and the best lubrication devices.

Promotion of these three factors ultimately will reduce plant maintenance and lubrication costs to a minimum and promote a general efficiency in all operations where lubrication is concerned.

C. C. Pecu

Electricity in Steelmaking—An Industry Transformed

(*Concluded from Page* 36)

systems; stokers; water softeners and machine shops.

A blast furnace depends upon electricity for many operations among which are: Ore unloaders; car dumpers, crushers; trestle haulage; transfer and scale cars; skip hoists; blowers; bells; clay guns; electric burners for opening tap holes; pig casting machines; slag crushers; sintering plants; and gas washers.

In the coke plants and by-product departments electric power is relied upon to operate charging cars; coke pushers; quenching cars; coke breakers; shaker screens; conveyors; by-product centrifugal machines; tar and ammonia pumps; liquor pumps; scrubbing towers; and boosters.

Electricity is used to a lesser degree in steelmaking departments, but even here it would be difficult to operate as conveniently or economically with any other power. Tool steels and high-grade alloy and special steels are made in electric induction furnaces. Bessemer steel is produced in bessemer converters for which electric blowers supply the air for blowing. For making open-hearth steel, electric power operates gas producers; charging machines; hot metal mixers; reversing equipment; furnace doors; dolomite machines; ingot strippers; transfer cars and ingot chariots.

It is in the rolling mill and finishing departments that electrical energy finds its fullest and most important applications. Rolling mills today are highly mechanized and it is here that the principal economies are effected. Among the many uses of electric power are: main roll drives; auxiliaries; screwdowns; manipulators; runout tables; cooling beds; conveyors; motor rollers; transfer cars; opening furnace doors and operating soaking pit covers; furnace pushers; slab chargers; conveyor hearths for continuous furnaces; distributors; hot and cold saws; cutoff machines; shears; bull dozers; straighteners; reeling machines; pull out machines; gag presses, roller levelers, stretcher levelers; pinch roll and bar pilers; bar twisters; roll lathes; roll grinders; motor-operated switches; and man cooling fans.

Other Applications

Passing on to semifinishing and finishing ends, we find electric power operating: Draw benches; pipe threaders; rotary planers; mechanical doublers; coiling and reeling machines; slitting machines; corrugating rolls; forging presses; rivet machines; nail machines; punches; pickling machines; galvanizing machines and cooling wheels.

Electric heat, one of the newer applications of electric energy, is serving the steel industry in several ways. Its most important application is found in heat treatng furnaces. Recently a new type of soakng pit has been designed to utilize electric heat. Other uses for electrical heating are in induction melting furnaces; immersion heaters; salt baths; lead furnaces; roll heaters; and space heaters.

Perhaps the most recent development is the use of photoelectric cells and thyratron tubes for controlling mechanical operations. Photoelectric cells will find wider use in the future, but already they have been applied successfully in the opening and closing of soaking pit covers; operating furnace doors; controlling the movements of heads on pipe facing machines in tube mills; as safety devices on punches and presses; and as counting devices.

The thyratron tube is a rectifying tube which has been made to successfully control the tension of wire between the die and motor-driven reel of wire drawing machines.

Radio Address To Reveal Importance of Wire

In connection with the annual meeting of the Wire association to be held in Cleveland, June 16-18, William A. Bennett, superintendent of the Goddard works, Wickwire Spencer Steel Co., Worcester, Mass., will broadcast an address, "Wire in Everyday Life," over the National Broadcasting Co.'s Cleveland station WTAM. The day and hour have not yet been announced.

One-Way Fired Soaking Pits Minimize Conversion Costs

UNTIL comparatively recently, the soaking pit in common use was of the regenerative type. In 1927, however, the Chapman-Stein Co., developed the one-way fired type in which the fuel is admitted through burner ports located in one wall close to the top of the pit. The burned gases are exhausted though ports located in the same sidewall below the firing port. The flame travels across the top of the ingots and doubles back in the form of a horseshoe, giving an even temperature throughout the pit.

Although the first was designed to heat six ingots, it has been found that pits approximately 15 feet long holding eight and ten ingots can be fired in this manner to obtain uniform heating. The design of this pit is different from the old type regenerative pit as shown in Fig. 1.

Involves Less Floor Space

Recuperative pits often can be installed in existing pit building to give from 50 to 100 per cent increased holding capacity because of less floor space needed and the ease with which the size of pit can be increased to take a larger number of ingots. For example, it often is found that 12 holes can be installed in the same space required for eight regenerative holes and that if desired, these can be built for eight ingots each rather than six as commonly is used for the regenerative pits.

The amount of materials required for the installation on the one-way fired type of pit is considerably less than that required for the construction of the old regenerative type of pit. Consequently, the first cost of the pits and building cranes are less. The elimination of the reversing valves and the more or less complicated operating mechanism also contribute to the reduction in first cost of the recuperative installation.

Flame Is Constant

As shown in Fig. 1, the firing port is located above the outlet port and the flame directly is constant in this vertical horseshoe travel. Since the preheating device permits the delivery of the air at a constant pressure at the firing ports, no reversing of the system is necessary and the reversing valves with their corresponding maintenance, therefore, are eliminated.

In regenerative pits the checker chambers alternately are heated and cooled the amount being determined by the period between reversals. It frequently happens that the checkers on opposite ends of the pit become unbalanced as regards temperature because of the different periods between reversals and of the different amount of friction through the flues leading to and from the checker chambers. This unbalanced condition causes the operator to give close attention to the unbalanced pit if the material is to be heated properly since every time the flow of gases is reversed, air, gas and stack valve must be reset to suit the new condition. The recuperative pit, due to its simplicity of design and construction, is much easier to maintain at a required operating condition.

Separate Ports Provided

The decreased fuel consumption obtained is due to several factors In the regenerative type pit, the same ports are used alternately for mixing the air and fuel and for exhausting the waste gases. In the one-way fired type of pit the firing and exhaust ports are separate and are designed for their own particular duty. Another reason for fuel economy is the double travel of flame in the pit. Since the flame travels the entire length of the pit twice, it is in the recuperative pit more than twice the time it is in the regenerative pit thus resulting in more heat liberation.

Exceptionally uniform heating can be obtained since the combustion chamber above the ingots permits the completion of combustion and allows the burned gases to completely envelope the ingots. In can be noticed that the butts of the ingot are practically the first part of the steel to

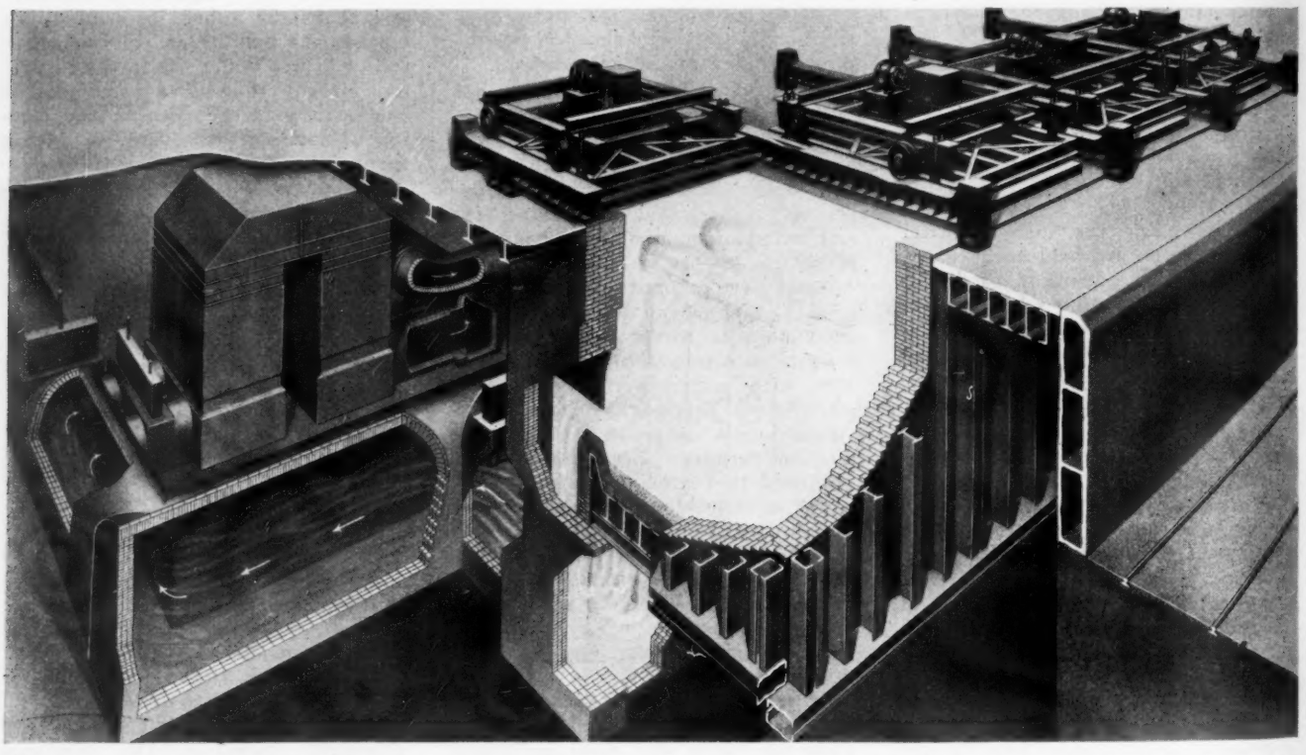
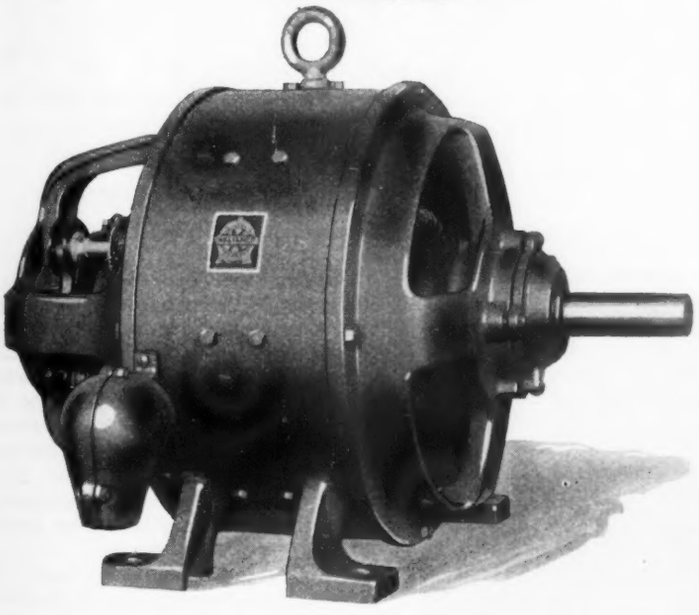


Fig. 1—Cut-away section of recuperative type soaking pit showing arrangement of heating system and direction of gas flow

MOTORS

that demonstrate the economy of QUALITY



FROM observations in their own motor-repair shops, steel-mill engineers have found where extra strength and quality mean more hours of continuous service. From the practical experience of these men we built up the big idea back of Type T Heavy-duty Motors—to produce a motor that would show better records on the hard jobs of steel making.

Steel mills have used a lot of these rugged motors, worked them hard and found that they stand the pace. These installations have been under the critical eyes of men who watch maintenance costs and learn the reason for good or bad records.

Reliance Motors in these mills have demonstrated the economy of quality by years of dependable service.

THE STEEL-MILL GENERAL-PURPOSE MOTOR

Reliance Electric & Engineering Co.,
1082 Ivanhoe Road Cleveland, Ohio

Branches: Birmingham, Boston, Buffalo, Chicago, Cincinnati, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Toledo.

Type T Heavy Duty RELIANCE MOTORS
Direct Current

come in the direct travel of the flame. This construction permits the complete burning of the fuel in the pit without the flame impinging on the steel. The construction also utilizes the maximum effect of radiation since it has a large mass of brickwork radiating heat to the steel.

Friction Losses Eliminated

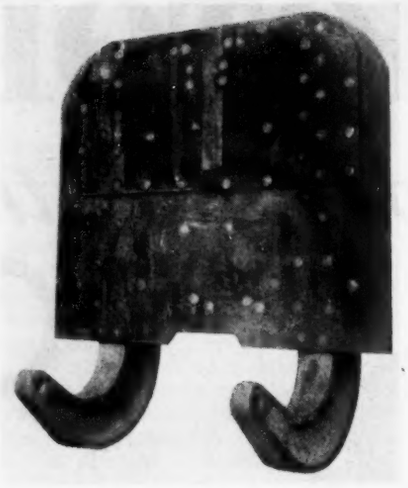
No reversing valves are used, and hence the friction losses encountered by the air in passing through the valves and air flues through the regenerators, are eliminated. The air from the recuperator not only can be delivered to the burners or ports at any desired pressure but can be measured which latter feature is particu larly in proportion with the operation of automatic control. The introduction of the air and fuel under pressure eliminates both channeling through the pit and infiltration of air into the pit around the cover. This feature also reduces oxidation losses.

Pits with checker chambers usually have high maintenance because of slag often cutting through the brick walls and entering the checkers. In the recuperative pits this condition is not possible because of the recuperator being located at some distance from the pit itself and of a special slag pit being installed between the soaking pit and the recuperator. The recuperators are not subjected to the alternate heating and cooling and in addition to having considerably longer life, can be repaired at considerably less cost than checkers.

The use of separate ports for firing and for exhausting the waste gases is responsible for combustion being completed in the pit. This eliminates the possibility of its taking place in the recuperator and results in a lower temperature in the flue leading from the pits.

Data collected from a large number of regenerative pits show that the scale losses average over 1½ per cent of ingot weight. By proper control of the atmosphere in the recuperative pit this scale loss can be reduced to less than ½ per cent. This saving of 1 per cent of ingot weight in scale losses amounts to considerably more than fuel savings. Moreover, a vast improvement in ingot surface is noticed. The one-way fired type of pits makes it possible to thoroughly mix the fuel with the air since the burner ports are designed for this purpose only and the design of the pit itself permits the complete burning of the fuel before having a chance to oxidize the steel.

After the proper proportion of fuel and air has been obtained the one-way fired pit permits the maintenance of the proper combustion conditions by permitting automatic individual control of each pit with regard to stack, fuel and air. Since there is no reversal or change in flow of fuel and air, the one-way fired type pit lends itself readily to the proportioning of the air and fuel.



Shovel dipper door equipped with rolled manganese steel plate to prevent breakage and to minimize wear

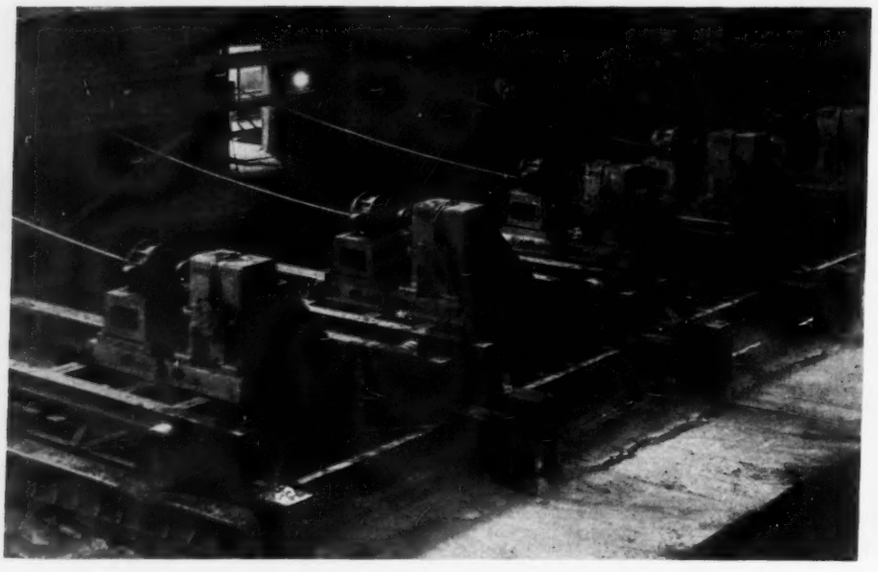


Fig. 2—Installation of five one-way fired soaking pits

Alloy Steel Dipper Doors Aid Quarrying Operations

Heavy quarrying operations required in the production of crushed stone by the Dolese & Shepard Co., Chicago, in its plant at La Grange Ill., have made necessary the construction of special heavy-duty dipper doors that will withstand rough treatment. The rock is limestone, and although explosives are used to break it up, pieces handled are fairly large and heavy. This caused a great deal of breakage to as well as wear on the dipper doors, and necessitated frequent replacements, attended by considerable expense.

In order to solve these difficulties, the dipper doors were equipped with manganese steel plates manufactured by the Manganese Steel Forge Co., Philadelphia. The main part of each door is made of two pieces of manganese steel plate 53 inches square and ½-inch in thickness. These pieces are joined together by countersunk rivets and then riveted to the hinge arms. The end portion of each door is reinforced with ¾-inch liner plate made of two pieces of ⅜-inch manganese steel plate. One of the doors is shown in an accompanying illustration.

Steel Treater Chapters Elect New Officers

Officers recently elected by the Rochester, N. Y., chapter of the American Society for Steel Treating are as follows: Chairman, R. H. Morris, sales manager, Davenport Machine Tool Co., Rochester; vice chairman, R. F. Kimber, district representative, Firth-Sterling Steel Co., Fayettesville, N. Y.; and secretary-treasurer, I. C. Mathews, research chemical engineer, research laboratories, Eastman Kodak Co., Rochester.

The Hartford, Conn., chapter has elected the following officers for 1931-32; Chairman, Henry I. Moore, district manager, Firth Sterling Steel Co.; vice chairman, J. H. G. Williams, Henry Souther Engineering Co.; secretary-treasurer, Lewis H. Knapp, sales manager, Hartford Electric Light Co.

J. H. Birdsong, metallurgist, Pratt & Letchworth Co. has been named chairman of the Buffalo chapter for the coming year. Other officers elected were: J. R. Eves, vice president, Falls Electric Furnace Corp., vice chairman; Clyde Llewelyn, metallurgist, Bliss & Laughlin Inc., secretary; and Charles F. Wahl, assistant metallurgist, Pratt & Letchworth Co., treasurer.

Drop Forging Industry Will Conduct Trade Survey

THE drop forging industry today is embarking upon a work of scientific self-examination which is expected to bring about a solution of its common problems. At the request of the American Drop Forging institute and with the anticipated assistance of members of the industry, the department of commerce has agreed to conduct a survey or special trade census of the industry—its equipment, investment, productive methods and resources. Like practically all other important manufacturing lines, the drop forging industry has witnessed a tremendous expansion in the past ten or 15 years. This has brought numerous benefits, but many problems as well—problems involving in many cases new principles of management, engineering, marketing and research. Statistics point to the fact that there is scarcely no industry in the United States that can produce more goods than normal domestic consumption needs require. This is one of the principal factors that has contributed to the declining margin of profits of industry in the last few years.

Surplus Capacity Exists

Data compiled for 1925 covering a limited number of drop forging companies revealed that the average concern was operating at only about 62.7 per cent of capacity, while in 1928 these same companies operated at barely 66 per cent of maximum. In other words, during these years, which certainly were not below average business years, the drop forging industry had a surplus capacity of 34 to 37 per cent.

The drop forging survey will consist of two parts, one pertaining to all maunfacturers of drop forgings and the other pertaining to those manufacturers who sell all or a substantial part of their total output as rough forgings. A separate questionnaire is to be used for each phase of the survey, and the first phase will be completed before the questionnaires for the second part are sent out.

The principal objects which are aimed at in the first phase of the survey are:

1. To determine the relative importance of the different types of forgings produced, such as automotive, airplane, railroad, agricultural implements, motors and engines, machinery, and other forgings.

2. Investment in drop forging production in 1928, 1929 and 1930.

3. The total annual tonnage of rough drop forgings manufactured each year from 1925 to 1930.

4. The number of tons of total drop forging production which was sold as rough forgings from 1925 to 1930.

5. The capacity of the industry in terms of maximum production of drop forging tonnage.

6. A census of equipment, showing both hammers and upsetters of various types, and the amount of change in equipment from 1928 to 1930.

The second phase of the survey will cover in part monthly sales of rough drop forgings from 1925 to 1930; the annual sales for each of these years of the various types of forgings; and the value of the annual shipments for 1925 to 1930 to the various states and sections, as, New England, New York, New Jersey, Pennsylvania, Ohio, Michigan, Illinois, Indiana, Missouri, Wisconsin, etc.

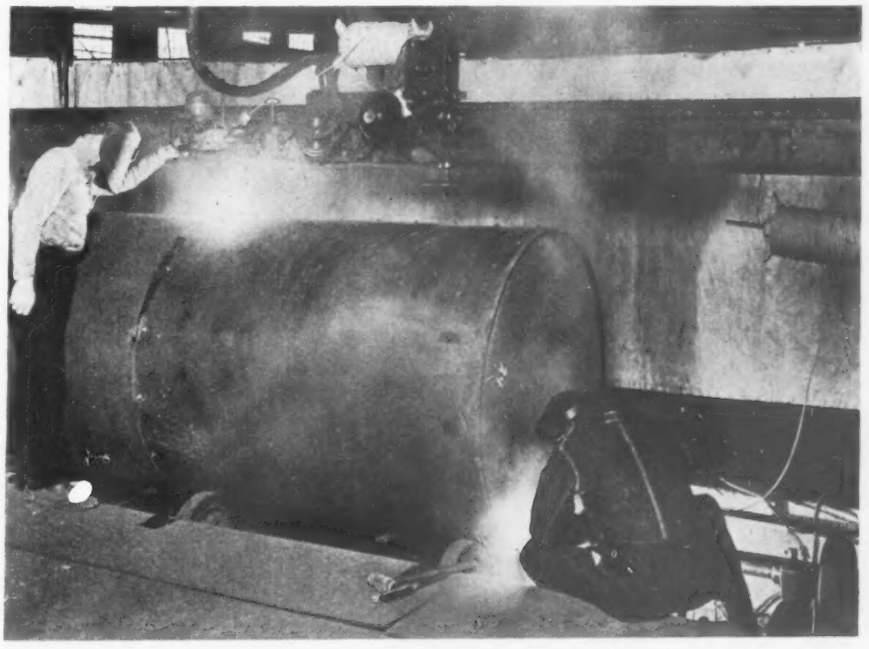
The results of the study will have application in two ways. First, the individual manufacturer will obtain data by which he may compare his own plant and operations with those of other concerns of the industry in his own size group, or with those in the same general geographical location as himself. For instance, he may gage with some accuracy the degree to which his business approaches—in trend of output, types of product, capacity and equipment in relation to investment—the average of other establishments with characteristics similar to his own.

The second use of the survey concerns the industry as a whole. It will provide facts upon which group policies may be formulated which will conduce to more profitable operations for all concerned, and aid in consolidating the position of the drop forging industry in the national economic scheme.

Ready for Distribution

Two thousand questionnaires for the first part of the survey now are in process of being mailed to drop forging manufacturers in all parts of the country. Every effort has been made to obtain complete coverage regardless of trade affiliations.

As rapidly as the questonnaires are returned they will be tabulated by the department of commerce, and when complete the results will be subjected to close analysis by the department's trade specialists. Upon the completion of the study the statistical data and the general conclusions will be issued in the form of a printed government report and will be mailed to every company co-operating in the survey. Questionnaires will be handled entirely by officials of the bureau of foreign and domestic commerce. No access to the returns will be permitted to any private agency or to the representatives of any other government department. As presented in the report the figures will be so grouped and combined that no possibility of even indirect revelation will exist.



WELDING TWO SEAMS SIMULTANEOUSLY AND AUTOMATICALLY

In the manufacture of tanks, the Novelty Steam Boiler Co., Baltimore, saves considerable time by welding a head seam and girth seam simultaneously. Automatic arc welding is employed, the equipment being supplied by the Lincoln Electric Co., Cleveland

High-Temperature Salt Baths Are Heated Electrically

A METHOD of heating high-temperature salt baths for the heat treatment of steels, which consists in continuously passing a low-voltage alternating electric current directly through the bath between an electrode immersed in the bath and the metal wall of the pot, recently has been developed by the Bellis Heat Treating Co., Branford, Conn. The pot, made of steel, chrome iron or other metal alloy, either wrought or cast, is encased in firebrick and this setting, in turn, is encased within a relatively thick-walled insulated structure.

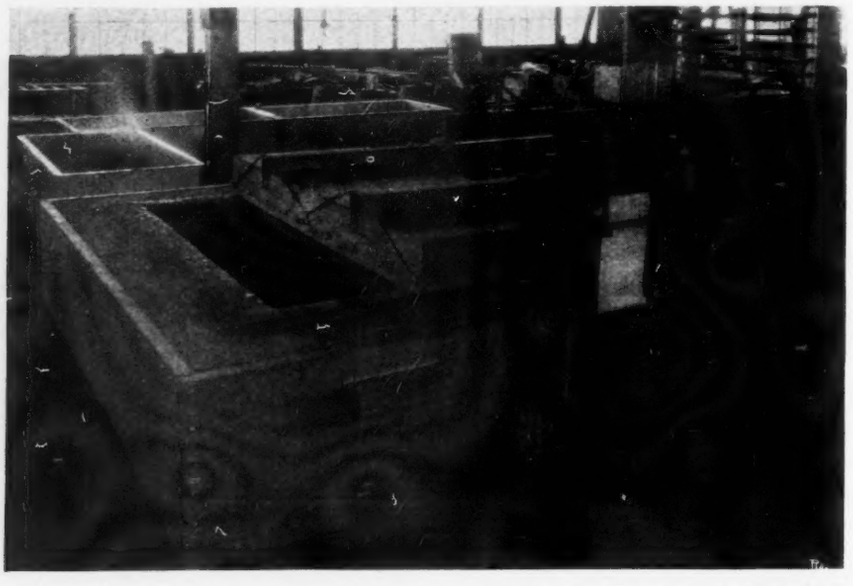
A U-shaped electrode is arranged in an inverted position so that one end extends into the pot while the other end extends downward in parallel relation to one sidewall of the furnace. A guide secured to the furnace is provided with a setscrew so that the electrode may be held in its adjusted position. Electric current is supplied to the electrode at low voltage, the value depending primarily upon the size and type of pot. By the use of a suitable cover for the pot and the insulated walls, the heat losses are kept to a low value. Ten kilowatts is sufficient to maintain the temperature of the bath with a normal amount of removal of the cover leaving 10 kilowatts available to heat the work. By immersing the electrode in the bath the current passes from the electrode through the bath solution to the wall of the pot. By adjusting the electrode the heat input can be decreased or increased accordingly.

The salt material in the solid form is an insulator and to reduce it to a fluid condition with the electrode, an iron compound such as thermit is used. This material is placed on top of the solid salt and is ignited. When a part of the salt has been melted the electrode is adjusted so that a maximum amount of current will pass and expedite the heating of the salt. If desired the thermit mixture may be used in connection with the fused salt or instead of melting the solid salt in this manner, an electric arc may be employed.

Salt Has Neutral Reaction

The salt bath material is so compounded that it is neutral to the metal to be treated. For the hardening treatment of high-speed tool steels, the bath has a temperature range of 1700 to 2500 degrees Fahr. without appreciable variation in viscosity or the emission of fumes or vapors. The hardening temperature is around 2400 degrees Fahr., but this same bath may be used for preheating the metal at the lower temperature, thus avoiding the contamination of the hardening bath which might occur in the transfer of the metal when first immersed in a separate preheating bath.

The relatively low temperature of the pot wall results in a greatly prolonged life of such pots while the original salt bath material may be continued in use almost indefinitely, it being necessary only to add small quantities of such material to the bath from time to time to compensate for that carried off in the form of a thin film by the metal being treated.



Electric heat treating furnace designed for treating work in a salt bath from 300 to 2500 degrees Fahr.

Standards Body Appoints More Representatives

American Standards association, New York, has appointed Edward O. Otis Jr., merchandising advisor, Associated Industries of Massachusetts, Boston, and C. W. Whitney, executive secretary, Purchasing Agents' Association of Northern California, San Francisco, as official representatives of the association. They will serve as contact points between the industries of their respective states and the association.

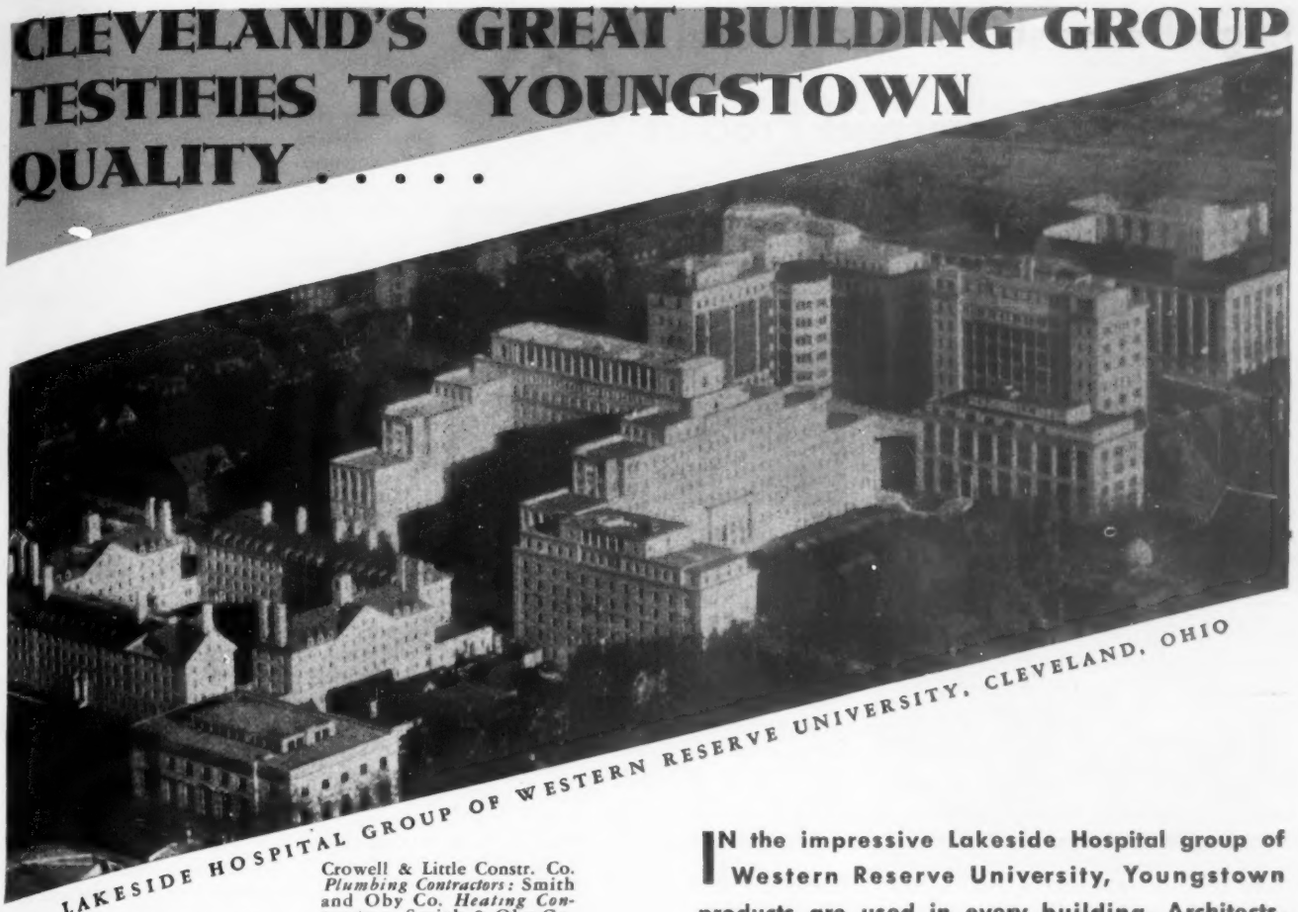
A file of the 181 national standards approved by the association is maintained by each of the local representatives for reference by local engineers and industries.

Other representatives of the American Standards association are: E. S. Strickland, executive secretary, Engineering Society of Buffalo, Buffalo; Edgar S. Nethercut, secretary, Western Society of Engineers, Chicago; C. R. Sabin, manager, Cleveland Engineering society, Cleveland; Bernard Moll, secretary, Grand Rapids Engineers club, Grand Rapids, Mich.; Charles E. Billin, secretary, Engineers Club of Philadelphia, Philadelphia; K. F. Treschow, secretary, Engineers Society of Western Pennsylvania, Pittsburgh; O. L. Angevine, executive secretary, Rochester Engineering society, Rochester, N. Y.; and George S. Wilson, engineering experiment station, University of Washington, Seattle, Wash.

Uses Stainless Wire for Guying Telephone Poles

A new use for noncorroding steel alloys has been found by the Empresa de Telefonos Ericsson, Mexico City, which has placed an initial order with the Allegheny Steel Co., Brackenridge, Pa., for 3300 pounds of chrome steel wire for guying telephone poles in regions where the salt air causes rapid corrosion of the galvanized product. The wire, a straight chromium-iron alloy containing 12 to 16 per cent chromium, is cold drawn, annealed and pickled, with a diameter of 0.203-inch. It has a tensile strength of about 75,000 pounds, at room temperature. This grade of steel also is being used to make rustless frets for stringed instruments and, in strip form, for musical instrument picks.

CLEVELAND'S GREAT BUILDING GROUP TESTIFIES TO YOUNGSTOWN QUALITY . . . . .



LAKESIDE HOSPITAL GROUP OF WESTERN RESERVE UNIVERSITY, CLEVELAND, OHIO

LAKESIDE HOSPITAL GROUP

Service Building:
Architects: Garfield Stanley-Brown Harris and Robinson. *Engineer:* John Paul Jones. *General Contractors:* Lundoff Bicknell Co. *Plumbing Contractors:* W. G. Cornell Co. *Heating Contractors:* W. B. Van Sickle Co. *Electrical Contractors:* Hatfield Electric Co. *Ventilating Contractors:* W. B. Van Sickle Co.

Medical School:
Architects: Coolidge, Shepley, Bulfinch and Abbott, Boston, Mass. *Engineers: Heating and Ventilating:* Buerkel & Co., Boston, Mass. *Plumbing:* James A. Cotter Co., Boston, Mass. *General Contractors:* Lundoff Bicknell Co. *Plumbing Contractor:* Smith & Oby Co. *Heating Contractors:* A. R. Brueggeman Co. *Electrical Contractors:* The Berg Clark Electric Co. *Ventilating Contractors:* A. R. Brueggeman Co.

Babies' Hospital:
Architects: Garfield Stanley-Brown Harris and Robinson. *Engineers: Heating and Ventilating:* Buerkel & Co., Boston. *Plumbing:* James A. Cotter Co., Boston, Mass. *Electrical:* Hixon Electrical Co. *General Contractors;* John Gill & Sons. *Plumbing Contractors:* Smith & Oby Co. *Heating Contractors:* A. R. Brueggeman Co. *Electrical Contractors:* Hatfield Electric Co. *Ventilating Contractors:* A. R. Brueggeman Co.

Maternity Hospital:
Architects: Garfield Stanley-Brown Harris and Robinson. *Engineers:* Clark MacMullen and Riley. *General Contractors:* Crowell & Little Constr. Co. *Plumbing Contractors:* Smith & Oby Co. *Heating Contractors:* A. R. Brueggeman Co. *Electrical Contractors:* Hatfield Electric Co. *Ventilating Contractors:* A. R. Brueggeman Co.

Pathology Building:
Architects: Garfield Stanley-Brown Harris and Robinson. *Engineers:* Clark MacMullen & Riley. *General Contractors:* Crowell & Little Constr. Co. *Plumbing Contractors:* Smith and Oby Co. *Heating Contractors:* Smith & Oby Co. *Electrical Contractors:* Hatfield Electric Co. *Ventilating Contractors;* Smith & Oby Co.

Lakeside Hospital:
Architects: Coolidge, Shepley, Bulfinch & Abbott. Boston, Mass. *Engineers: Heating and Ventilating:* Buerkel & Co., Boston. *Plumbing:* Jas. A. Cotter Co., Boston. *Electrical:* Hixon Elec. Co. *General Contractors;* John Gill & Sons. *Plumbing Contractors:* W. G. Cornell Co. *Heating Contractors:* W. B. Van Sickle Co. *Electrical Contractors:* Martien Electric Co. *Ventilating Contractors:* W. B. Van Sickle Co.

Hanna Memorial Building:
Architects: Coolidge, Shepley, Bulfinch and Abbott, Boston, Mass. *Engineers: Heating and Ventilating:* Buerkel & Co., Boston, Mass. *Plumbing:* James A. Cotter Co., Boston, Mass. *General Contractors:* John Gill & Sons, *Plumbing Contractors:* W. G. Cornell Co. *Heating Contractors:* W. B. Van Sickle Co. *Electrical Contractors:* Martien Electric Co. *Ventilating Contractors:* W. B. Van Sickle Co.

Nurses' Dormitory:
Architects: Coolidge, Shepley, Bulfinch & Abbott, Boston, Mass. *Engineers: Heating and Ventilating:* Buerkel & Co., Boston, Mass. *Plumbing:* Jas. A. Cotter Co., Boston, Mass. *Electrical:* Hixon Elec. Co. *General Contractors:* John Gill & Sons. *Plumbing Contractors:* W. G. Cornell Co. *Heating Contractors:* W. B. Van Sickle Co. *Electrical Contractors:* Martien Electric Co. *Ventilating Contractors:* W. B. Van Sickle Co.

Allen Memorial Library:
Architects: Walker & Weeks. *Engineers: Heating and Ventilating:* Clark MacMullen & Riley *Plumbing:* Walker & Weeks. C. H. Loughridge. *General Contractors:* Reaugh Constr. Co. *Plumbing Contractors:* Smith & Oby Co. *Heating Contractors:* Smith & Oby Co. *Electrical Contractors:* Martien Electric Co. *Ventilating Contractors:* Smith & Oby Company.

IN the impressive Lakeside Hospital group of Western Reserve University, Youngstown products are used in every building. Architects, engineers and contractors on all of these buildings have recognized the superior qualities of Youngstown pipe, Youngstown Buckeye Conduit and Youngstown steel sheets, all of which have been used in this new university group. / Sheet Metal contractors the country over recognize the merits of Youngstown steel sheets . . . . and use them consistently. / Youngstown products are handled by leading jobbers everywhere.

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MINNEAPOLIS · · Andrus Bldg.
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YOUNGSTOWN

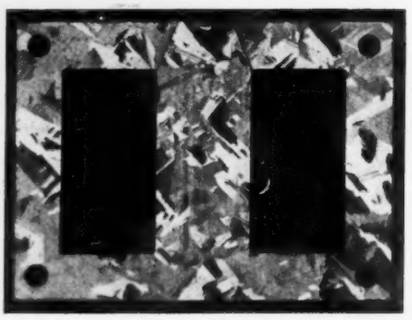
GALVANIZED SHEETS PROTECT · SAVE WITH STEEL

High Permeability Iron-Nickel Alloy Becomes a Commercial Product

WITH the announcement that the American Rolling Mill Co., Middletown, O., is now rolling in sheet and strip from the highly magnetic alloy developed by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., this material assumes commercial importance. (May 28, Page 19.) In its present form the alloy, known as "hipernik," is over 30 times as magnetic as open-hearth steel or iron and has a hysteresis loss one-sixth that of the best commercial silicon iron. Further refinement is expected to reduce this loss to one-ninth.

The material was discovered by Dr. T. D. Yensen, manager of the magnetic division of the Westinghouse company in 1923 while seeking to improve the magnetic properties of silicon iron. In perfecting this iron he produced in 1923 the iron-nickel alloy called hipernik. Later he succeeded in refining the alloy by annealing in an atmosphere of hydrogen at a temperature of from 1000 to 1300 degrees for many hours, thus removing small amounts of impurities, chiefly oxygen from the ordinary 40-60 per cent alloy.

It was found that impurities amounting to only a few hundredths of 1 per cent produce differences in magnetic properties of several hundred per cent. It was also learned that permeability, the ease with which a material can be magnetized, depends on regularity of the alignment of the atoms forming the space lattices. When the little spinning magnetons or electrons are all pointed in the direction of the magnetizing force, the saturation point is reached.



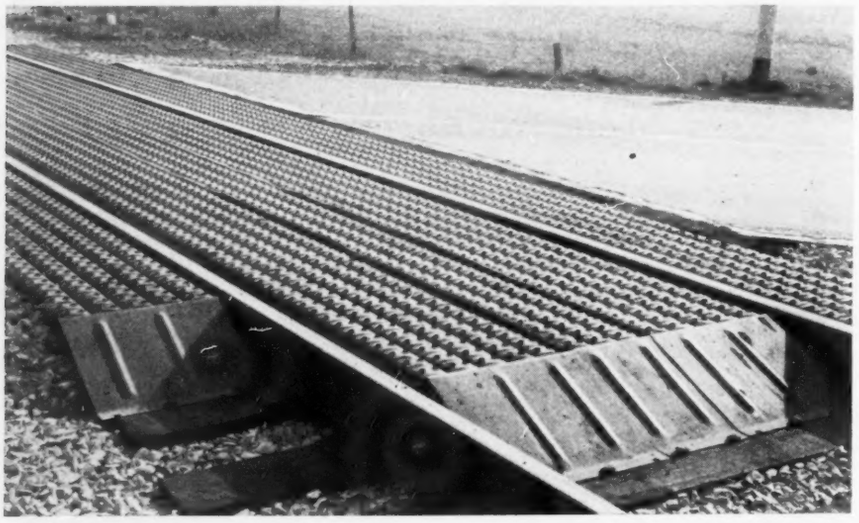
Grain structure of magnetic alloy with high permeability

Structure Is Striking

Structure of the alloy is to be seen in the accompanying illustration. Each individual grain is composed of billions of atoms of iron and nickel, arranged with perfect regularity and symmetry in a cubic lattice. The difference in shading of the grains is due to the variation in orientation of the lattices.

The alloy has wide possibilities, many of which will be developed since commercial production has commenced. Until the present production has been experimental, on a small scale and very costly. Its use is said to have greatly improved radio receivers and sound amplifying systems. Instrument transformers using this alloy for their cores can be made smaller, more efficient and more accurate.

The American Rolling Mill Co. is rolling the material on its continuous mills into coils many feet long. Ingots weighing 12,000 pounds are employed. The finished product is used either in sheet form or as cold-rolled strip 0.014-inch thick.



PRESSED STEEL SHAPES MAKE UP NEW HIGHWAY-RAIL CROSSING

This new type of highway-rail crossing, designed and manufactured by A. O. Smith Corp., Milwaukee, is composed of three types of steel sections—locking bases which are spiked along the track ties, flangeways next to the inside of the rails, and deck channels on top running parallel to the rails. Raised nubbins are pressed integral with the channels to make the surface nonskid. Pressed steel end ramps also can be furnished to provide a finished appearance to the installation. Parts are supplied in standard lengths in even multiples of 18 inches

Furnace, Oven Operators Hold Spring Meeting

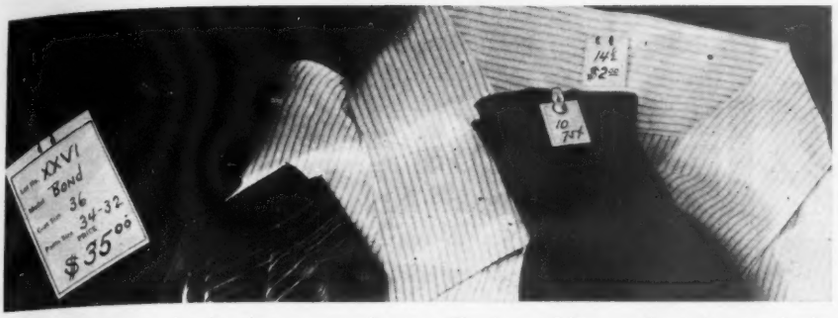
The Eastern States Blast Furnace and Coke Oven association held its annual spring meeting and election of offices for the coming year June 5 at the Wildwood Country club, Wildwood, Pa. The morning program consisted of separate meetings of the blast furnace and coke oven groups at which gatherings subjects pertaining to blast furnace and coke oven operations were discussed.

Howard P. Zeller, Jamison Coal & Coke Co., Greensburg, Pa., was elected president of the association for the coming year, succeeding J. E. Lose, general superintendent, Homestead Steel Works, Carnegie Steel Co., Pittsburgh. Other officers elected were: Vice president, J. T. Whiting, Hamilton Coke & Iron Co., Hamilton, O.; secretary-treasurer, H. M. Crossett, superintendent of coke ovens, Cambria plant, Bethlehem Steel Co., Johnstown, Pa.

Markets New Brick for Insulating Furnaces

A new insulating firebrick known as the B. & W. No. 80 now is being manufactured by the Babcock & Wilcox Co., New York. It may be used without a facing of firebrick on the furnace side, protected only by a coating of No. 80 high-temperature or patching cements. The product is suitable for lining oil and gas furnaces and electric furnaces of the resistance type and for coal-fired equipment in protected wall areas not exposed to mechanical abrasion and slag action.

The Doehler Die Casting Co., 386 Fourth avenue, New York City, has perfected a process for producing brass die castings. Heretofore the company has been making die castings of lead, tin, zinc and aluminum alloys only. The company has plants at Brooklyn, N. Y., Batavia, N. Y., Pottstown, Pa., Toledo, O., and Los Angeles.



About 400 tons of wire is consumed annually in making various types of pin tickets, which are used mainly in the merchandising of wearing apparel

Large Uses of Steel in Small Ways

193rd Article ◆ Pin Tickets

WHENEVER a pair of socks, a sweater, or almost any other article of clothing is purchased a small amount is added to the consumption of steel wire. Tags known as pin tickets, consisting of cardboard and double pointed wire staple, are used by the millions in the drygoods and clothing industry. The most common use is to carry the price of the article to be sold, but they also are employed for marking samples, attaching the manufacturer's guarantee, and for many other purposes.

One manufacturer estimates about 400 tons of wire is consumed annually in making pin tickets. This does not include tags which carry wire as fasteners and which come under a different classification. It does, however, include "bend-over tickets" such as used on neckties and where fabric is not to be pierced. The demand for bend-over tickets is increasing rapidly as they frequently are used instead of wrappings in notion stores. In the five and ten-cent stores strips of ribbon and tape of a definite length are folded up and enclosed in bend-over tickets.

1,500,000,000 Annually

Annual production of pin tickets is estimated at about 1,500,000,000. Automatic machines make them at the rate of 150 to 200 a minute. The cardboard in strips is fed in at the rear of the machine; the wire is fed in at right angles, and is formed, sharpened and pierced through the cardboard at close intervals, depending upon the length of the ticket.

For the bend-over type of ticket both wire and cardboard enter from the rear. The cardboard is in two layers, one of which is gummed, and the wire in two or more strands is fed in between these layers. The action of the machine moistens the gummed strip, presses the two strips together with the wire placed evenly between them, and then scores the completed strip at regular intervals to facilitate bending. This scoring forms tiny loops in the wire and also bends the cardboard. Frequently one layer is made of linen ledger paper instead of cardboard.

Trade Secrets Involved

The first machines were designed and built by Alonzo Kimball about 1875, and though many improvements have been made the same general principles of the early machines still are employed. Pin ticket manufacturers, however, have developed important details and guard them carefully as trade secrets.

Sometimes the same machine which makes the tag prints it with the price, style and other information desired by the purchaser. In other instances a machine set up in the user's store or plant takes the tags in strips and automatically stamps and cuts them as required.

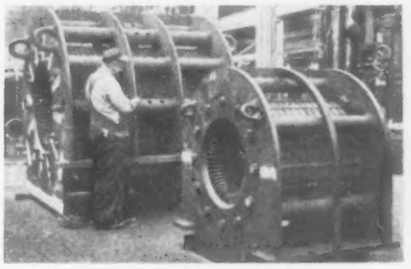
The wire is a low-carbon steel of various analyses and tempers. Manufacturers of pin tickets through long experience have discovered the proper qualities for each use. That which is to be attached to heavy rugs must be much stiffer than one used on sweaters. The wire is either tinned or galvanized.

The usual sizes are 0.020-inch, 0.035-inch, 0.027-inch and 0.030-inch. This wire is supplied in coils averaging 8 to 12 pounds each, and also on spools. The larger manufacturers buy wire in 10-ton lots or more.

Steel companies are not particularly anxious to develop the pin ticket trade as it is regarded as "fussy," and shipments occasionally are rejected for some slight variation in temper which is not apparent to the wire manufacturer. There are only six or seven pin ticket manufacturers in the country and the wire business has grown up without definite specifications. Ticket manufacturer either orders wire as previously supplied or else sends a sample of wire and says "ship 10 tons like sample."

Pipes Replace Flat Bars In Generator Construction

According to the latest construction practices, pipes, welded into notches on the outside of turbine generator frames, are replacing the usual ribs made of flat bars. In addition to the structural advantages, these tubes, shown in the accompanying illustration, serve as air ducts, taking cooling air through the ends and discharging it through holes in the middle. The lifting eyes welded on the endplates eliminate the need of heavy lifting plates on the sides. These lifting eyes may be reached through cover plates after the generator is enclosed.



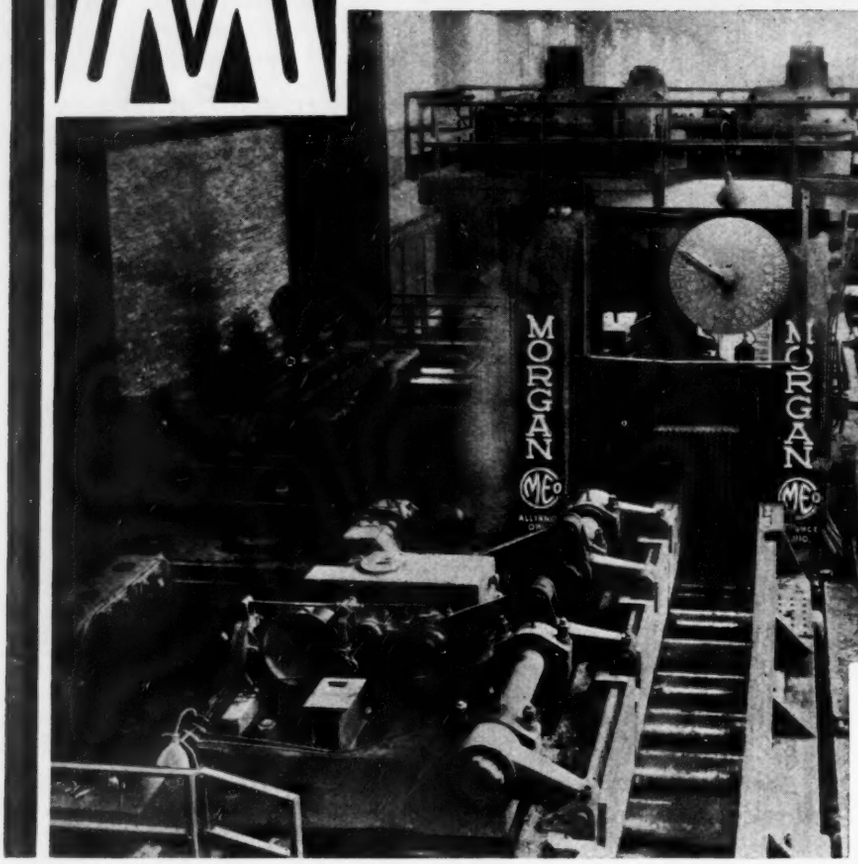
Issues Booklet on Rust-Resisting Alloy Steels

A treatise on stainless and heat-resisting alloy steels prepared under the direction of a committee representing subsidiary manufacturing companies of the United States Steel Corp., now is available in the form of a 35-page booklet.

The usual physical properties, as developed in the 18-8 alloy, are presented and characteristics discussed. The text includes details of the recommended practice in the utilization of the 18-8 chromium-nickel alloys, such as forging, annealing, welding, forming and deep drawing, riveting, spinning, pickling, cutting, punching and shearing, soldering and polishing.

Similar data are covered in discussing five other corrosion and heat-resisting steel compositions. A few typical applications of the chromium and chromium-nickel alloy steels in the series made by the various companies are arranged in tabular form.

MORGAN



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- *Manipulator is of the overhead type, compact and simple. Finger lifts and side guards are each operated by two motors in series—assuring very quick acceleration and greater tonnage. Write for Bulletin No. 16.*

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Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Turbine Blade Wear

Maximum possible life of high-speed, low-pressure turbine blades, reviewed by J. L. Ray, in Power, May 26, p. 804, 5 pp., 8 illusts.

Steam turbine blading continues to be one of the main sources of operating trouble. Although wear never has been excessive, it has necessitated enough blade replacement to justify researches made to reduce or eliminate it. The author presents the results of investigations of such materials as chromium plating, A. T. V. material, tantalum, stellite, tungsten, sprayed metal, nitralloy, monel, etc. which were employed to reduce wear of steam turbine blades.

STEEL, 6-11-31

Power Charges

Rate of purchase and mode of plant operation in relation to electric power, discussed by O. H. Henschel, in The Foundry, June 1, p. 57, 2¾ pp., 3 tables, 2 illusts.

What was accomplished in a midwestern malleable iron foundry in reducing power charges is explained in detail. As a result of the changes in rates and equipment, service has improved, production interruptions practically have been eliminated and costs have been reduced materially. Electric energy costs were decreased approximately 47.7 per cent.

STEEL, 6-11-31

Electric Heating Units

Application of electric heating units to process machines, discussed by F. E. Finlayson, in Maintenanace Engineering, May 1931, p. 221, 4 pp., 4 illusts.

Where the heat must be concentrated and the temperature required is relatively low, the cartridge type unit is ideal for the application. It is best applied by inserting in a slightly oversized hole in the part to be heated. If a die block is to be warmed the unit should be placed near the required surface, irrespective of position. Ordinarily sheath wire for industrial applications is limited to temperatures around 1000 degrees Fahr. When sheath wire or strip heaters have been applied to a surface, insulation should not be packed closely around the backs of the units to avoid sifting between the unit and the surface to be heated. A sheet of metal first should be applied to cover the units and the insulation put on the outside. For low temperatures a thick blanket of felt is satisfactory. For high temperatures mineral wool, asbestos, 85 per cent magnesia or diatomaceous earth are recommended materials.

STEEL, 6-11-31

Normalizing Steel

Properties of sorbitic or normalized steel, discussed by R. Whitfield, in Metallurgia, May 1931, p. 29, 1¾ pp., 2 illusts.

Normalizing steel effects marked increases in elongation and reduction of area and an increase in hardness. Details of normalizing sheets and wire and an equilibrium diagram showing the basis of all heat treatments of straight-carbon steels are presented.

STEEL, 6-11-31

Shape Cutting

Gas cutting as applied to the shaping of steel parts for welded fabrication, summarized by E. J. Tangerman, in American Machinist, June 4, p. 871, 3 pp., 4 illusts.

Investigations show that grain structure is disturbed, no matter what the method of finishing for joining. In general the higher the carbon content of the steel the higher will be the migration of carbon to the face. Investigations of bending properties show that regular machine-cut pieces do not show any inferiority when compared with mechanically shaped pieces. For clean machine cutting, the preheating flame is likely to melt down and round the upper edges of the cut if it is not adjusted carefully. For cutting of rusty or dirty work, oxyacetylene has no equal due to its higher flame temperature. Chemical composition limitations are summarized by the author.

STEEL, 6-11-31

Nitriding Process

Composition of steel adopted for nitriding, methods of preparing the work and results obtained by modifying the nitriding process. discussed by J. H. Cates Jr., in Machinery, June 1931, p. 742, 2¼ pp.

The latest development in nitrided steels is the addition of a small amount of sulphur. It is claimed that steel thus produced compares favorably, as regards hardness and resistance to corrosion, with the standard steel developed for nitriding. Nitriding at the lower temperature of 900 degrees Fahr. produces a fairly thin but extremely hard case, while nitriding at a higher temperature results in a case that is somewhat softer but considerably deeper. A heating period of about 40 hours seems to give the best combination of surface hardness and case depth. When it is desired to protect certain portions of a piece from the action of the ammonia gas, the best and easiest method is to nickel-plate such surfaces to a depth of at least 0.005-inch, keeping the voltage as low as possible to prevent sponginess of the plate.

STEEL., 6-11-31

Modern Lubrication

Effect of pressure upon the viscosity of a lubricant and maintenance of journal oil film, discussed by A. E. Flowers, in Power, May 26, p. 828, 2 pp., 2 illusts.

In running-in bearings, using the same load capacities, it is found that the bearing metal containing the greater lead percentage can be run-in with the expenditure of less power. Dewaxing oil to zero degree pour point rises the film strength and by adding 5 per cent of fatty oils, the strength of a petroleum oil is raised about 5 per cent. In any circulating system, and especially in turbine oiling systems, acid conditions have been found in the oil after a short period of use. These result from oxidation, and as they are more soluable in water than in oil, a thorough washing of the oil with water prior to centrifugal purifications is becoming a common practice, using hot water in order to take advantage of these acidic bodies at higher temperatures. This process prolongs the life of an oil charge almost indefinitely and is becoming the accepted method.

STEEL, 6-11-31

Now—The Tin Mill Installs SC Walking Beam Pair and Pack Furnaces

Some months ago the two SC continuous pair and pack furnaces illustrated above were installed in the sheet mill of a mid-western steel plant . . . The results attained with these furnaces in the treatment of sheets was so satisfactory that they have just contracted for three more pack and pair furnaces for their tin mill . . . These new furnaces . . . like the sheet mill furnaces now in operation . . . will be of the Surface Combustion walking beam type . . . fired with SC 2-stage velocity burners . . . The walking beam furnace . . . originated and perfected by Surface Combustion . . . is revolutionizing modern mill practice throughout the country.

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Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

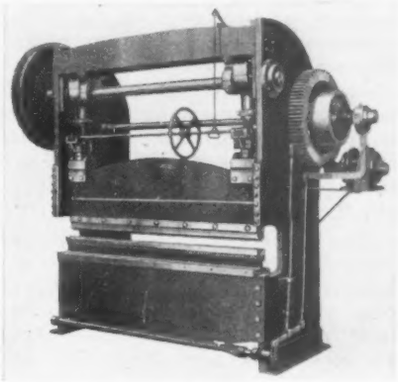
Steel Frame Press Brakes Have Arc Welded Parts

Dreis & Krump Mfg. Co., Seventy-fourth street and Loomis boulevard, Chicago, has developed a line of light type press brakes designed for the production of sheet metal parts used in stoves, refrigerators, soda fountains and other sheet metal specialties. One of these machines is shown in the accompanying illustration.

These presses are of arc-welded steel construction, this being true even of the gear wheel. The one-piece housings have a deep gap which allows work longer than die length to be passed through the machine from left to right. The ram also is one piece with loose clamping bar for quick changing of tongued dies. The bed consists of two plates with standard 1½-inch spacing, which makes it possible to use the press for multiple punching in connection with an inexpensive attachment.

A one-piece eccentric shaft, forged of high carbon steel, carries a flywheel and friction clutch unit running on tapered roller bearings. The machine can be stopped at any point on the up or down stroke. Ram adjustment ordinarily is by a handwheel at the front center of the press, but motor adjustment can be provided if desired. All bearings are lubricated by a centralized pressure system.

These machines are built in four capacities and in lengths ranging from 3 to 8 feet. They have direct motor drive, either through gearing, as illustrated, or by V-belt.



Press brake of welded steel built by Dreis & Krump Mfg. Co.

◆

Milling Machine Designed For Tungsten Carbide

Kearney & Trecker Corp., Milwaukee, announces a new duplex milling machine designed for use with tungsten carbide cutters. This machine, which is shown in the accompanying illustration, is capable of spindle speed up to 1000 revolutions per minute, and table feeds up to 100 inches per minute.

Every part of the machine is designed for strength and rigidity necessary to attain unusually high speeds and fast speeds without vibration. Each spindle is mounted in a heavy forged quill which is heat treated, hardened and ground. These quills are 7 inches in diameter and are provided with independent cross adjustment of 7-inches each. Movement of each quill is by a hand crank attached to the side of the uprights on which the control levers are located. Each quill is provided with a heavy brace which ties it directly to the over arms, so that the quill receives a rigid support throughout its entire cross adjustment.

Improved Spindle Drive

The spindle drive is by heavy, hardened steel herringbone gears. The drive differs from the usual type inasmuch as the last gear is solidly attached to the spindle, while the driving pinion is splined to the pinion shaft. This feature insures a positive, smooth drive to each spindle throughout the entire cross adjustment of the spindle quills.

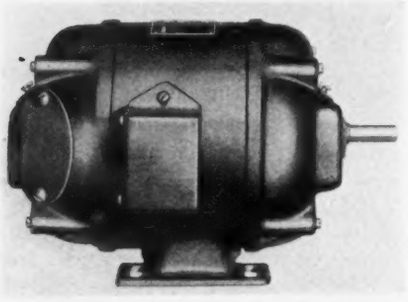
The double over-arms of each spindle block can be tied together so that both spindles lie on the same plane. Likewise, these brackets are designed so that over-arms can be bolted together regardless of the vertical position of each spindle block. If, for example, it is necessary to have one spindle higher than the other, the connection still can be made. This method of tying together over-arms, spindle braces and quills results in the attainment of a rigid truss effect.

Centralized Adjustment

The spindle blocks are mounted between two uprights and are aligned by accurate bearing surfaces for their full length. They are guided by a deep tongue slide and held in adjustment by a full-length gib. Vertical adjustment of these blocks is by a hand crank, also attached at the side of the machine having the control levers. This arrangement permits the spindle block and spindle quills to be adjusted from a central point, since all locking bolts and adjusting screws are located close together.

By fully enclosing the table dogs in a compartment with a sliding cover, chips are prevented from interfering with their operation. The machine is lubricated automatically throughout by means of a geared-type pump which is located on the

Kearney & Trecker duplex milling machine, designed to give rigidity and high speeds and feeds necessary to effective utilization of cutters fitted with tungsten carbide blades



One of the interchangeable motors built by Century Electric Co.

pulley side of the clutch so that it is brought into operation as soon as the motor is started. Coolant is distributed by a large geared-type pump located on the opposite side of the clutch so that it is operated only when the spindle is rotated. This pump is a self-contained unit driven by a sliding gear which can be disengaged by operation of a small lever. All rotating members of the machine, with the exception of the spindle noses, are fully inclosed. The machine is equipped with a four V-belt drive, adjustment being attained by a pivoted motor bracket. The motor compartment is cooled by a circulation of air drawn into it by the fan-type spokes of the main drive pulley.

Wide Choice of Speeds and Feeds

All machines are arranged to accomodate either 7½ or 10 horsepower motors. They can be furnished with tables 12-inches wide with longitudinal power feeds either of 18, 24 or 30 inches, or with tables 18-inches wide equipped with power feeds either of 24 or 30 inches. Three speed ranges are available, 15 to 150 revolutions per minute, 30 to 300 revolutions per minute or 100 to 1000 revolutions per minute, each having 12 changes. There also is a choice of three ranges of feeds, namely, ½ to 20 inches per minute, 1 to 40 inches per minute, or 2½ to 100 inches per minute, each with 18 individual changes. Power traverse to tables is at 240 inches per minute.

◆

Interchangeable Mounting Is Feature of Motors

Century Electric Co., St. Louis, announces a new line of fractional-horsepower motors having interchangeable mounting dimensions. These motors, one of which appears in the accompanying illustration, are built in repulsion-start induction single-phase, split-phase single-phase, squirrel cage induction three-phase, and direct-current types.

The bearing brackets in this new design offer unusual protection against falling objects, dirt, or dripping water. The motors have rolled steel frames, welded steel feet, which are slotted for belt adjustment, and bearings machined from phosphor bronze castings. They are equipped with this company's wool yarn system of lubrication.

◆

Self-Propelled Truck Aids In Structural Riveting

Mercury Mfg. Co., 4118 South Halsted street, Chicago, has developed a unique self-propelled riveting truck. This machine, which is shown in the accompanying illustraton, is useful in fabricating work.

The truck is 55-inches wide, 76-inches long and carries a tower structure 114-inches high. This tower supports an I-beam extending 95 inches each side of the center of the tower. On this beam ride chain block trolleys which carry portable pneumatic riveting presses of 25-ton capacity.

The truck is driven by a 220-volt direct current motor through a worm type rear axle. The current is brought to the truck by a cable to a take-up reel. There are two speeds forward and two reverse. In operation, the truck with its two riveting presses is moved slowly up and down the aisles along which structural beams are being fabricated. Crews working on either side can move a press easily and conveniently to the location of the rivets to be driven. Speed of travel of the truck is remote controlled by push button stations carried on the belt of one of the men working with the riveting press. When the truck must be moved over a considerable distance, the operators get aboard the machine, which then is driven to its new location at the rate of three or four miles per hour. Special guards are provided to push discarded rivets and other scrap metal out of the way as the machine travels along.

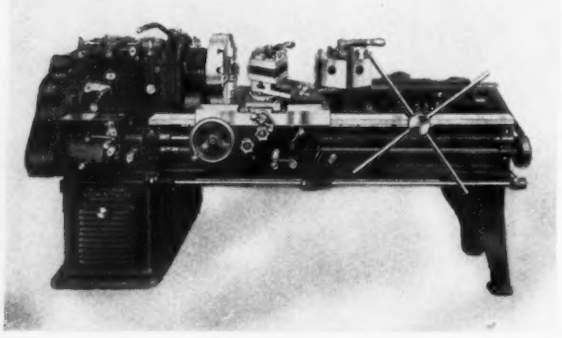
Self-propelled riveting truck designed by Mercury Mfg. Co.

◆

Heavy-Duty Lathes Have Production Attachments

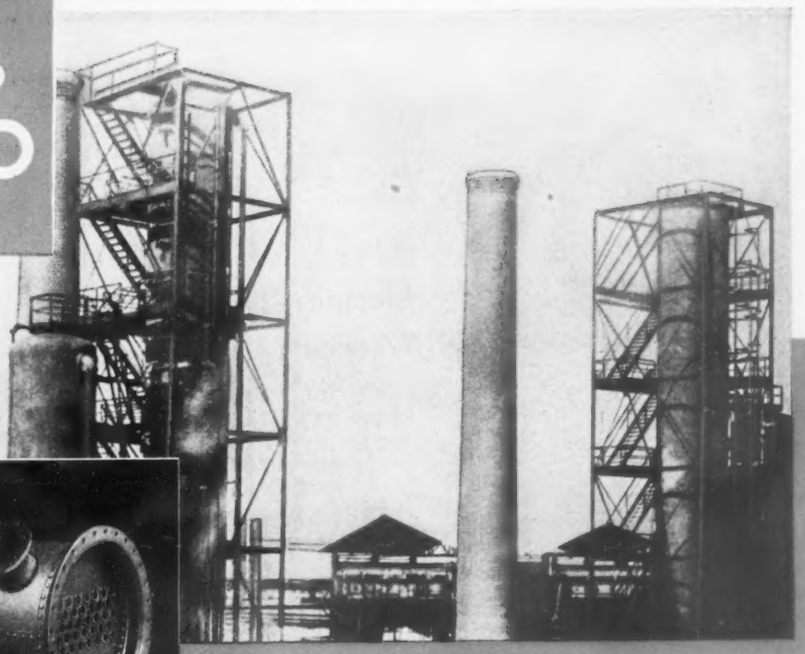
Cincinnati Lathe & Tool Co., 3207 Disney street, Cincinnati, announces improvements and new attachments in connection with its heavy duty engine lathes. The accompanying illustration shows one of the latest 20-inch x 10-foot lathes, with motor mounted in a cabinet leg below the headstock, with improved power feed and four-way turret tool block on the compound rest, and with hexagon turret on the bed. With the equipment illustrated this engine lathe essentially is a complete turret lathe suitable for a wide range of bar or chucking work.

With six tool positions available on the turret and four on the tool block, which incidentally has 12 indexing

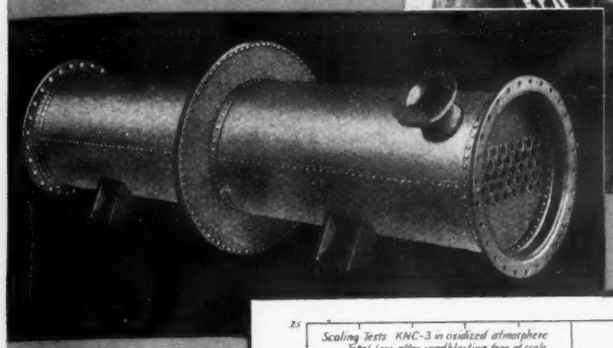


Improved production lathe with built-in motor drive, built by Cincinnati Lathe & Tool Co., showing hexagon turret on bed and four-way turret tool post

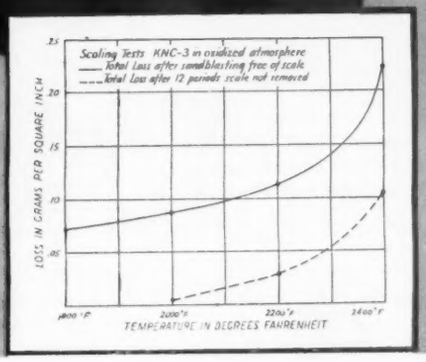
KEEPING A STEP AHEAD WITH ENDURO



Enduro ideal for refinery equipment.



Heat Exchanger of Enduro—for longer life.



ENDURO FOR HIGH TEMPERATURE APPLICATIONS

Enduro, Republic's Perfected Stainless Steel, brings to designers of equipment subjected during operation to high temperatures, high stresses and corrosion a medium well suited to the solution of vexing problems.

Several grades of Enduro are available, each possessing characteristics of strength, toughness, oxidation resistance and workability that makes it suitable for a particular class of service, such as refinery equipment, chemical equipment, furnace parts, oil burner parts, retorts, oven linings, heat exchangers and a host of other industrial applications.

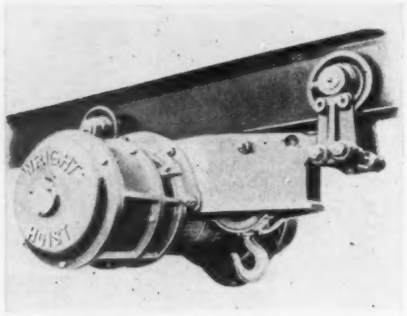
Enduro Nirosta can be supplied in billets, rough turned tube rounds, bars, sheets, plate and hot rolled strip. Let our metallurgists tell you how this enduring metal will meet your most exacting requirements, and recommend the most suitable analysis.

CENTRAL ALLOY DIVISION
REPUBLIC STEEL CORPORATION
MASSILLON, OHIO

ENDURO
REPUBLIC'S PERFECTED STAINLESS STEEL

Enduro is sold only through Republic Sales Offices and Authorized Distributors.

"Manufactured under license from the Chemical Foundation, Inc., under basic patents No. 1316817 and No. 1339378."



Low headroom hoist developed by Wright Mfg. Co.

positions (three for each turning tool), work requiring numerous operations can be performed rapidly and accurately from start to finish in one setting, with no time out for changing tools. Also both rough and finish boring with a bar held in the hexagon turret and piloted by a bushing located inside the bore of the spindle, can be done effectively.

These various attachments can be furnished on all of this company's lathes from 16 to 32-inch swing, inclusive, of which bed lengths range from 6 feet up, by increments of 2 feet.

◆

Router and Miller Useful On Light Die Sinking

Reed-Prentice Corp., Worcester, Mass., announces a new router and vertical milling machine suitable for use on brass, steel and cast iron, in the cutting of stamps, stencils and light dies. One of these machines is shown in the accompanying illustration.

The ball bearing spindle is driven through a V-belt by a 1-horsepower ball bearing vertical motor, giving standard spindle speeds of 500 to 3000, 666 to 4000, and 1000 to 6000 revolutions per minute. Special equipment can be furnished to give spindle speeds up to 12,000 revolutions per minute. Spindle pulley brake and lock permit quick stopping of the spindle and easy changing of collets and cutters.

The sliding head is operated by a clutch handle or foot treadle and has a micrometer depth stop graduated in thousandths of inches, with vertical scale graduated to 2 inches and subdivided in tenths. Large micrometer dials also are provided for longitudinal, cross and vertical feed screws. A profile attachment is included among the standard equipment.

The machine has longitudinal feed of 14 inches, cross feed of 11 inches and a working surface of 18 x 8⅞ inches. A 15-inch rotary table can be furnished as extra equipment. Net weight of the machine is 1650 pounds.

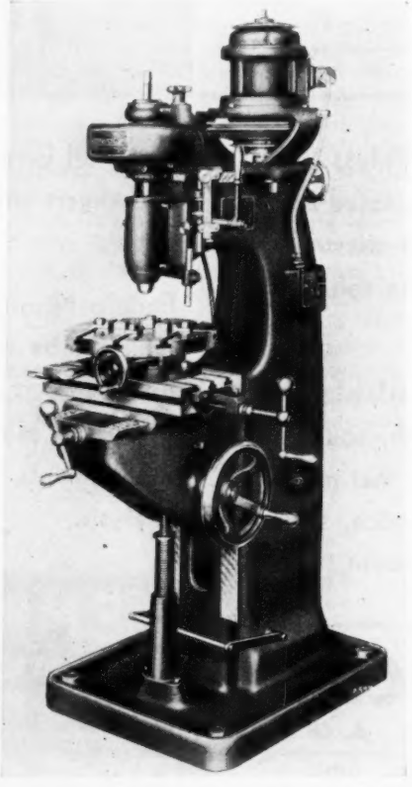
◆

Electric Hoists Require Minimum Headroom

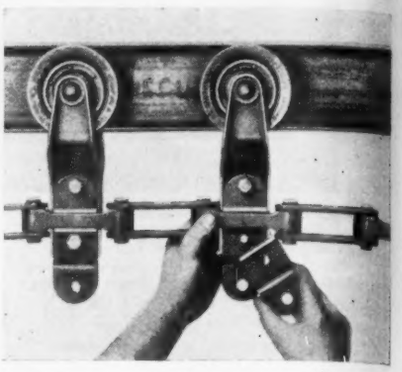
Wright Mfg. Co., Bridgeport, Conn., has designed electric hoists to operate under extraordinarily low headroom conditions. One of these hoists is shown in the accompanying illustration.

In the case of one of these hoists of ½-ton capacity, minimum distance from the bottom of the I-beam to the hook is only 11 inches, while in the case of the 1-ton hoist this distance is only 13-inches. In spite of this compact design, drums and sheaves are of ample size to avoid the excessively sharp bending which otherwise would result in undue cable wear.

Push button or pendant rope control are optional, both at the same price. Equipment includes a safety limit switch, safety load block, positive mechanical brake, heat treated forged gears, and preformed wire cable, which has the desirable characteristic of hugging drums and sheaves tightly without excessive bending strain. Lubrication of the entire mechanism is by oil bath.



Reed-Prentice vertical router and miller designed for light die work



Installing conveyor chain made by Saginaw Products Corp.

◆

Improved Conveyor Chain Is Installed Easily

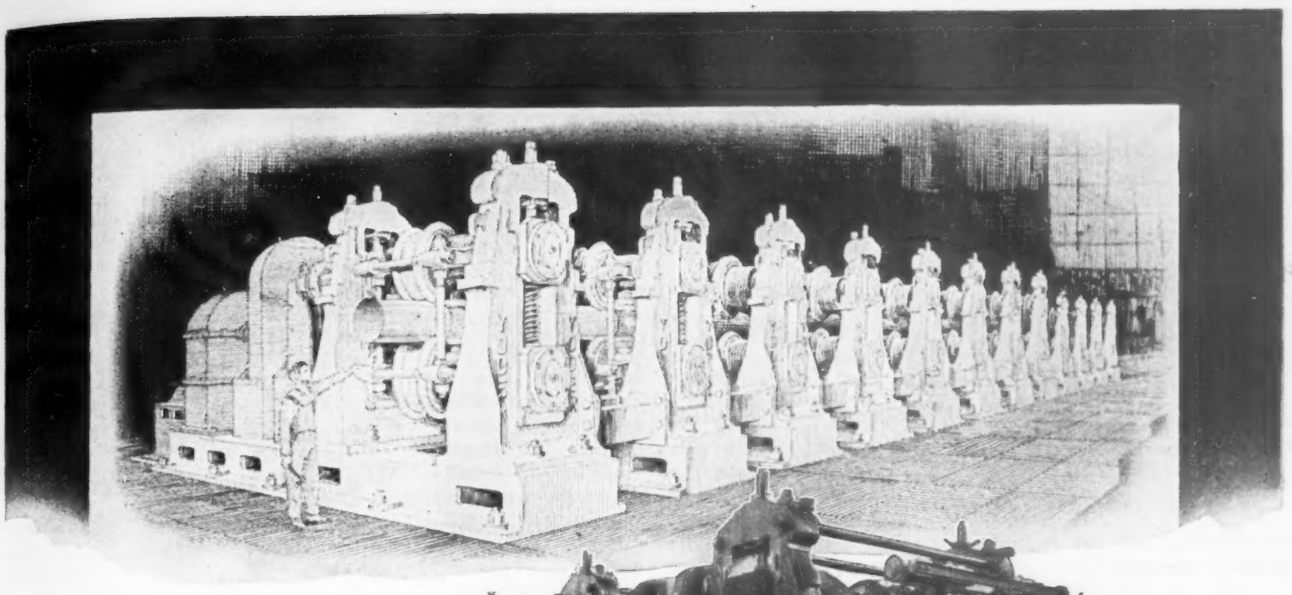
Saginaw Products Corp., Saginaw, Mich., has developed a new conveyor trolley chain of steel construction. One of its units is shown in the accompanying illustration.

The bracket assembly extends through the chain link, with the chain attachment lugs bolted directly to the bracket tongue. This tongue projects below the lower side of the chain. Instead of the erection crew making the bracket assembly when the job is being erected, this type of bracket is assembled by the manufacturer. The trolley is delivered to the job ready to roll on the track. In attaching it is necessary only to raise the chain so that the bracket tongue projects through the proper link, the attachment lugs then being bolted in place. One bolt secures both lugs and one man handles the operation readily.

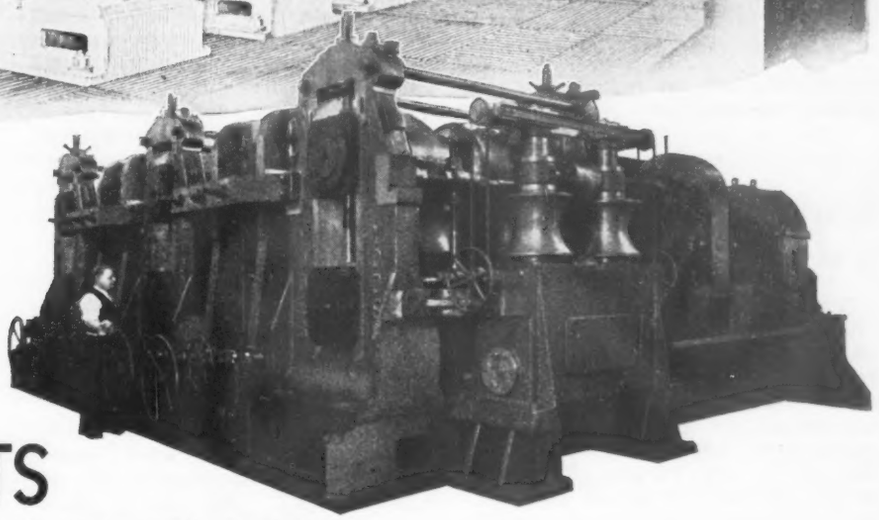
Refinements in Design

The manufacturer points out that special heat treatment and coining of the wheel bearing races, careful hardening of the wheel treads, rigid axle mounting, high-grade ball bearings and unusual wear resistance of nickel steel chain makes this equipment capable of withstanding maximum chain pulls and enables it to take both horizontal and vertical dips without vibration or chattering.

The trolley is designed to operate with standard clearances on any 4-inch I-beam track. The chain is interchangeable with ordinary drop forged chain, being used on the same sprockets. Consequently the new equipment is available both for new



Forms 100 feet of 30" pipe per minute



THE GIANTS OF PIPE MACHINERY

Sizes and straightens 100 feet of 36" pipe per minute

The forming mill is equipped with steel housings — hardened and ground rolls — roller bearings. It has a capacity for forming pipe from 16 to 30 inches inclusive with wall thickness up to 3/4 inch. Produces seams suitable for welding.

The sizing and straightening mill is a nine stand unit for pipe ranging from 16 to 36 inches inclusive and in any length. It is equipped with anti-friction bearing throughout. All rolls are brought to contour by micrometer adjustment.

These mills are backed by over twenty years experience in developing Cold Roll Forming Machines. Our pipe equipment handles all sizes from 1/8 inch to 36 inches diameter, and wall thickness from tin plate to 3/4 inch.

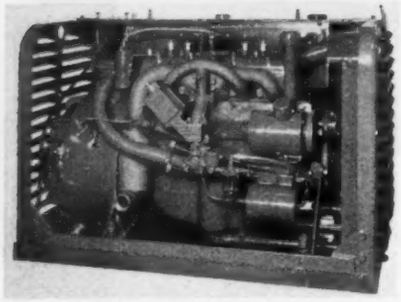
Designed and Built by YODER

Builders of

Gang Slitting Shears
Rotary Shears
Automobile Sheet Metal Forming Machines
Pipe Forming Machines

Consult our engineers on your sheet or plate problems

THE YODER COMPANY
W. 55 ST. and WALWORTH AVE. CLEVELAND, OHIO
PLATE AND SHEET METAL MACHINERY SPECIALISTS



Ford-powered gas-electric truck unit developed by Ready-Power Co.

installations and for replacement on existing installations.

◆

Special Opening Die Head Is of Large Size

Eastern Machine Screw Corp., Truman and Barclay streets, New Haven, Conn., recently has built an unusually large self-opening die head of heavy duty type. It is designed to cut four threads per inch of American-National form in outside diameters of 6¼, 6¾, 8⅛ and 8⅞-inches. An idea of the size of this die head may be gained from the accompanying illustration, included in which is a standard die head of 5/16-inch capacity.

This die head weighs 325 pounds, is 14½ inches in diameter, but is only 10 inches long, exclusive of its shank. There are six chasers to a set, a set averaging 9 pounds in weight. An adjustment is provided on the overhanging arm for accurate control of length of thread, and micrometer adjustment on the face plate gives a simple and accurate control of pitch diameter. The body and wearing parts are hardened and ground. Closure of the die head is by means of a long detachable handle shown in the illustration.

This particular die was designed for use on a large turret lathe for cutting threads on fire hydrant barrels and stand pipes.

◆

Automobile Engine Powers Gas-Electric Truck Unit

Ready-Power Co., 3820 Grand River avenue, Detroit, has brought out a new line of gas-electric industrial truck power plants in which Ford model "A" engines are used. One of these power plants, with its hood removed, is shown in the accompanying illustration.

Two types are offered, one featuring electric starting and ignition, using a 6-volt battery and the other using simple magneto ignition. The power generator is wound either for 36 or 48 volts.

◆

Welding Control Attained By Electronic Tubes

General Electric Co., Schenectady, N. Y., announces a new control mechanism for intermittent line and spot welding. This control, which makes use of thyratron tubes instead of contactors, allows current interruptions of 1000 per minute or even higher.

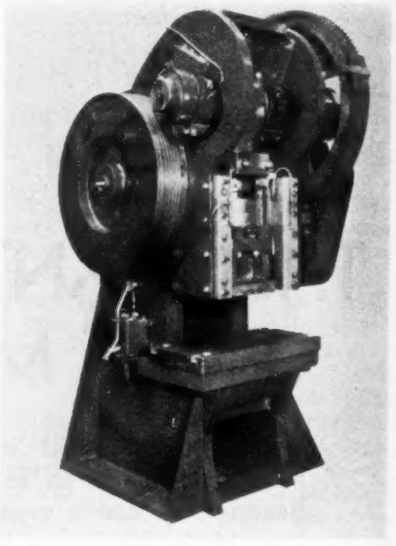
In addition to the high speeds which can be obtained, contactor wear is eliminated, both on the contactor tips and the entire mechanical assembly.

The new control consists of two essential parts, the series transformer and a control panel. The series transformer ordinarily is of standard distribution type, mounted at a point conveniently near the control panel. On the control panel are mounted two hot-cathode thyratrons, filament transformers, grid transformer, time-delay relay and necessary resistors, capacitors, etc. The only equipment mounted on the front of the panel are two thyratrons and the time-delay relay. The entire panel is enclosed in a sheet-metal case which is provided with high-voltage bushings for the entrance of secondary leads of the series transformer, and brackets for floor mounting. The case has a door which can be locked shut.

◆

Open-Back Presses Are of Welded Steel Design

Allsteel Press Co., 12015 South Peoria street, Chicago, announces that it now is manufacturing a line of all-steel presses, fabricated from plate by welding. One of these appears in the accompanying illustration, this being an open-back gap press of geared type.

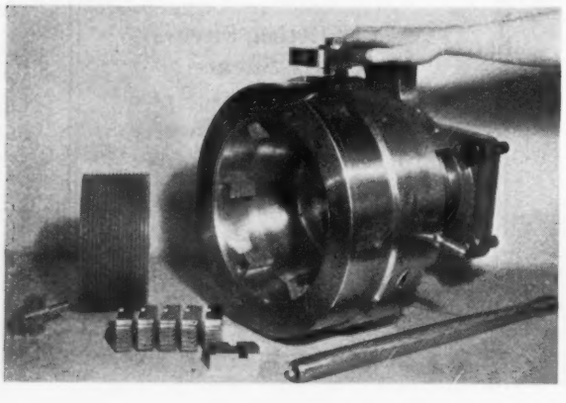


Press fabricated from steel plate by Allsteel Press Co.

Plates of required thickness to provide necessary rigidity are cut to size and shape and are arc welded into units which have tensile strength beyond that required in ordinary service. Care is taken to attain attractive appearance in the welded shapes, the appearance of the machine illustrated above indicating the desirable effect attained.

The maker points out that with the elimination of patterns, specifications can be changed to meet customers' requirements with little or no delay or added cost. A changed dimension means only cutting a little more or a little less steel.

In addition to the press which is illustrated, one of inclinable type also is available.



Unusually large opening die head built by Eastern Machine Screw Corp. for performing such operations as threading fire hydrants and standpipes in heavy turret lathes

Steel Rate Is Breaking Through 40

Shrinking Auto and Railroad Needs Continue a Liability — Structural Awards Largest in 3 Months—Valley Mills Are Standing on New Sheet Classification

STEELWORKS operations this week are on the verge of breaking through the 40 per cent rate which many leaders of the steel industry believed would represent the summer low. While building, pipe line and general manufacturing needs for steel appear to be reduced to a minimum, no important gains may be expected from them over the near future. But automotive and railroad demand continues to ebb, hence it is not illogical to expect moderate further recession.

Of the four major production districts, Pittsburgh, down fractionally this week, is already at 40 per cent. Chicago is off one point to 40-42 per cent. Eastern Pennsylvania is unchanged at 37 per cent, and the Youngstown district has advanced one point to 42 per cent. Of the less important production areas, Buffalo is unchanged at 40 per cent, Birmingham remains at 50 per cent, Cleveland is down 9 points to 44 per cent.

In general, neither producers nor consumers manifest noteworthy interest in third quarter contracts or prices. Important Mahoning valley sheet and strip makers indicate their intention, beginning with the third quarter, to adhere firmly to the new classification bases, which for many flat rolled products is tantamount to an increase. There is no doubt, however, that the usual carryover of business on the old bases will militate against immediate, widespread application of the new prices. Apparently a start is to be made with a firm stand on the higher finishes.

Sheet prices for third quarter, based on the new classifications, are expected to be announced by leading producers late this week. In some districts, wire and nail prices have been extended into third quarter, as already done on bolts, nuts and rivets. The recent attempt to strengthen strip prices indicates the levels to be asked for third quarter, and no change appears in prospect for semifinished steel, plates, shapes or bars.

Due in large measure to the award of 25,000 tons for the Marshall Field Estate building in Chicago, to the McClintic-Marshall Corp., this week's structural awards amount to 61,599 tons, the largest since early in April. This is more than double the 26,704 tons awarded last week. While a number of small projects are not materializing, the balance is maintained by large bridge jobs, of which three alone require 185,000 tons.

The decline in automobile production which carried May output 4 per cent under the 335,000 of April is being accelerated this month. It appears that June production will certainly fall below 300,000 units, and may not better the 275,000-rate of March. Ford requirements for some products have been reduced by half.

Indicating the approaching end of their primary rail orders and absence of secondary buying, Chicago rail mills now are operating at no better than 40 per cent. Seaboard Air Line has placed 3500 tons of rails with the Birmingham maker. Freight car awards in May totaled only 20, an unheard-of low number.

Steel pipe line orders are conspicuously absent, although mills could book substantial business if willing to accept long-term obligations. Chicago plate mills this month will increase shipments of skelp to the Milwaukee pipe fabricator, but these will be against old orders. Plates are more active, with 4000 tons pending for an eastern gas holder; 4000 tons for piling at Cleveland, and a considerable amount for dredges and barges.

The reduction of 8 per cent in the daily output of steel ingots in May, from 104,711 gross tons in April to 93,065, was not unexpected in view of the persistent decline in operations.

Further loss in pig iron production is indicated by the banking or blowing out of four additional stacks this week. Scrap prices are tending to level off and short interests are less active. To the extremely low prices of scrap and its availability is ascribed the fact that iron ore shipments this year are only one-fourth the volume of the same period of 1930.

STEEL's price composite this week is unchanged at $31.03.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (June 10, 1931)	$31.03
Last week (June 3, 1931)	31.03
One month ago (May, 1931)	31.37
Three months ago (March, 1931)	31.66
One year ago (June, 1930)	33.53
Ten years ago (June, 1921)	41.87

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 10, 1931	May 1931	March 1931	June 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.76
Basic, valley	17.00	17.00	16.75	18.50
Basic, eastern del. eastern Pa.	17.00	17.00	17.31	18.75
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.01	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	18.40
*Southern No. 2, Birmingham	12.00	12.00	13.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.75	17.76	18.26	20.26
Malleable, valley	17.00	17.00	17.00	19.00
Malleable, Chicago	17.50	17.50	17.50	18.40
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.38	19.13
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.45	2.50	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.75	30.00	31.25
Sheet bars, open-hearth, Pitts.	29.00	29.75	30.00	31.25
Billets, open-hearth, Pittsburgh	29.00	30.00	30.00	31.25
Wire rods, Pittsburgh	35.00	35.00	36.00	36.00

	June 10, 1931	May 1931	March 1931	June 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.65	1.65	1.75
Steel bars, Chicago	1.70	1.75	1.70	1.85
Steel bars, Philadelphia	1.94	1.94	1.94	2.04
Iron bars, Chicago	1.70	1.80	1.70	1.90
Shapes, Pittsburgh	1.65	1.65	1.60	1.70
Shapes, Philadelphia	1.76	1.76	1.81	1.66
Shapes, Chicago	1.70	1.75	1.70	1.80
Tank plates, Pittsburgh	1.65	1.65	1.65	1.70
Tank plates, Philadelphia	1.85½	1.85½	1.80½	1.85½
Tank plates, Chicago	1.70	1.75	1.70	1.80
Sheets, blue anl., No. 13, Pitts.	2.00	2.00	2.05	2.15
Sheets, black, No. 24, Pitts.	2.15	2.25	2.35	2.55
Sheets, gal., No. 24, Pittsburgh	2.80	2.80	2.90	3.20
Sheets, black, No. 24, Chicago	2.40	2.40	2.50	2.70
Sheets, blue anl., No. 13, Chicago	2.15	2.15	2.20	2.30
Sheets, galvanized, No. 24, Chi.	2.95	2.95	3.05	3.35
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.80	1.90	1.90	2.15
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25
SCRAP				
Heavy melting steel, Pitts.	10.50	11.25	12.90	15.10
Heavy melting steel, eastern Pa.	9.00	9.50	10.50	13.28
Heavy melting steel, Chicago	8.50	8.65	9.75	12.05
No. 1 wrought, eastern Pa.	10.00	11.00	11.00	14.25
No. 1 wrought, Chicago	8.25	8.40	9.00	11.50
Rails for rolling, Chicago	11.00	11.15	12.00	14.55

Sheets

Market Quiet as New Classification Prices Approach Test—Some Sales for Third Quarter

SHEET PRICES, PAGE 67

Pittsburgh—Sheet prices under the new classification scheduled for the third quarter have not been provided a test because consumers show little interest. Incoming business is fairly steady and in some instances recently has shown a slight increase. Demand generally, however, lacks a definite trend. Orders for automotive sheets continue to decline gradually and there is little prospect of improvement for a number of weeks. Specifications for the common grades of sheets are spotty with the total volume little changed. On spot orders mills usually quote 2.15c to 2.25c for black sheets; 2.80c for galvanized; 2.00c for No. 13 gage blue annealed; 1.85c for Nos. 9 and 10 gage, and 3.00c to 3.10c for autobody. Mill operations continue slightly below 40 per cent.

New York—Sheet consumers continue to buy sparingly and show little interest in third quarter, notwithstanding most sellers have indicated intentions of quoting higher prices on certain grades. Current prices on galvanized sheets are 2.75c to 2.80c, Pittsburgh, to the general trade, and 2.70c to large jobbers. Black sheets are 2.25c, Pittsburgh, subject to occasional shading of $2 a ton. Blue annealed plates and sheets are 1.85c and 2.00c, Pittsburgh, respectively.

Philadelphia—Test of the new sheet classifications and prices will begin soon but will not be completed for a month. Meanwhile, black sheets are moving at 2.15c to 2.25c, Pittsburgh; galvanized at 2.75c to 2.80c for the general trade, and 2.70c for the large jobbers.

Youngstown, O.—A sufficient number of sheet sales are being made on the new classification basis for third quarter to assure a moderate but earnest inauguration of the new price schedules. The way is being prepared by makers of full-finished sheets. The question still to be answered is what price basis will be announced by mills in the Pittsburgh and Chicago districts. Common black sheets are being purchased in small lots, namely for immediate use. Small orders are going at 2.25c, Pittsburgh, with larger consumers paying 2.15c. Demand for galvanized and blue annealed sheets also is confined to immediate needs and quotations are unchanged. Transference of its autobody sheetmaking activities from Newton Falls, O., by the Newton Steel Co. to its Monroe, Mich., mills has taken out of this district at least for the summer one of its largest producers of this grade. Makers continue to ask and receive 3.10c, Pittsburgh, for autobody sheets.

Cleveland—A few sheet producers report the past week was the slowest of the year for orders and shipments. New inquiry generally is at the low point and consumers show little interest in third quarter. The next two weeks probably will test the new classification prices. Some makers of electrical refrigerators, stoves and advertising signs are taking fair tonnages. Black sheets for prompt shipment are quoted at 2.15c to 2.25c, Pittsburgh, and for the third quarter, 2.40c. Autobody sheets usually are 3.10c, though some material is being billed at 3.00c.

Cincinnati—Mills in this district are accepting orders for third quarter at the new classification prices. Production is maintained at around 50 per cent.

Chicago—Third quarter sheet prices are likely to be announced late this week, but no change is indicated from existing levels. The market generally is 2.35c, mills, for No. 24 black; 2.90c for No. 24 galvanized; 1.95c for No. 10 blue annealed; and 2.10c, mills, for No. 13 blue annealed. Orders are irregular and largely in carload lots.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.15c to 2.25c
Philadelphia, delivered	2.44c to 2.54c
Gary, Indiana Harbor	2.35c
Chicago, delivered	2.40c
Birmingham, base	2.40c
St. Louis, del.	2.60½c
San Francisco, c.i.f.	3.00c

TIN MILL BLACK, No. 28

Pittsburgh, base	2.55c to 2.65c
Gary, base	2.65c to 2.75c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.80c
Philadelphia, delivered	3.04c to 3.09c
Chicago, delivered	2.95c
Gary, Indiana Harbor	2.90c
Birmingham, base	2.95c to 3.05c
St. Louis, del.	3.15½c
San Francisco, c.i.f.	3.50c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
St. Louis, delivered	2.40½c
Philadelphia, delivered	2.29c
Birmingham	2.15c to 2.20c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, delivered	2.14c
St. Louis, delivered	2.25½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

AUTOMOBILE NO. 20

Pittsburgh, base	3.00c to 3.10c

FURNITURE NO. 24

Pittsburgh, patent leveled	3.50c

New Classifications, Pitts. base:

Heavy cold-rolled No. 10, 2.35c; cold-rolled No. 20, 2.95c; heavy furniture No. 10, 2.75c; light furniture No. 20, 3.35c; furniture No. 24, including patent leveling, 3.50c. Hot-rolled No. 10, 1.70c; hot-rolled No. 24, 2.40c to 2.50c. Differentials of 10 and 15 cents, respectively, at Gary, Ind., and Chicago, del.

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00
Gary, Ind., base 10 cents higher.	
Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.80-1.90, and 1.90
Cement coated nails	1.80-1.90, and 1.90
Galvanized nails	3.80-3.90, and 3.90

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

Steel Plates

Base, Pittsburgh	1.65c
Philadelphia, del.	1.85½c
New York, delivered	1.93c
Boston, delivered	2.05c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.80c to 1.85c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f	2.00c
St. Louis, del.	1.95½c

Structural Shapes

Base, Pittsburgh	1.65c
Philadelphia, del.	1.76c
New York, del.	1.85½c to 1.90½c
Boston, del.	1.98½c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.80c to 1.85c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Base, Pittsburgh	1.60c to 1.65c
Chicago, base	1.70c to 1.80c
Birmingham base	1.80c to 1.85c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.15c
Cleveland, base, local del.	1.70c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.94c
New York, del.	1.98c
Boston, del.	2.05c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c to 1.65c
Eastern mills	1.50c to 1.55c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c to 1.80c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c
Stock lengths, mill	1.60c to 1.65c
Chi., billet	1.85c to 2.00c
Chi., rail steel	1.60c to 1.70c
Chi., rail steel, less carload	1.90c
Philadelphia, cut lengths	2.19c
Cleveland, cut lengths	1.95c to 2.05c

Cold Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.80	Cr., Ni., Van.	1.50
4100 .15 to .25 Mo.	0.50	Carbon Van.	0.95
4600 .20 to .30 Mo.		9250 (flats)	0.25
		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.60c to 1.65c
Do, 6 6/16 to 24-in., Pitts.	1.50c to 1.60c
Hot strip, bands 6 in. and under, Chicago	1.70c to 1.75c
Do. 6 1/16 to 24 in.	1.60c to 1.70c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.15c to 2.25c
Worcester, 3 tons, over	2.40c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi.
Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., Pittsburgh	2.40c to 2.50c
Do, less carloads, 5 kegs or over	2.65c to 2.75c; less than 5 kegs 2.80c to 2.90c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Demand Slackens and Third Quarter Prices Seem Likely to Be at Present Level

BAR PRICES, PAGE 67

Chicago—Bar mill production has tapered to slightly less than 50 per cent and automotive business forms the backbone of specifications. Partsmakers in western territory will have fairly full schedules for the next ten days, and their specifications for alloy and other bar stock will not be far behind May. It appears producers will be satisfied to hold prices at 1.70c, Chicago, base, for third quarter. Demand is regarded as hardly strong enough to justify another attempt at advances, although it is felt prices have been reduced as far as they can go. Heavy finished steel specifications are fairly steady, but do not develop into anything like backlogs, except in plates and structurals.

Philadelphia—Steel bars hold at 1.65c, Pittsburgh, with occasional shading. Trading is slack. Iron bars are held at 1.60c to 1.70c, Pittsburgh.

Pittsburgh—Demand for steel bars continues to decline. Specifications are off only moderately from a month ago but continue to reflect declining requirements of the automotive industry as well as lighter demand from miscellaneous consumers. Producers defer announcement of the third quarter price. Inquiry for that period has been light and it is expected that the current 1.65c, Pittsburgh, price will be continued.

Youngstown, O.—Buying of steel bars goes forward slowly, consumers merely covering immediate needs. This particularly is true of common steel bars but alloy steel bars are somewhat more active Common bars hold here at 1.65c, Pittsburgh.

Cleveland—Carbon bar sales in June continue to decline. Sales in May for most makers fell below the April level, and June promises to extend the rate of decline. All classes of bar users are taking subnormal lots. Carbon bars in Cleveland are quoted at 1.70c, base Cleveland. Outside sales are generally quoted at 1.65c. Alloy steel bars are 2.65c, base, mill.

Cold-Finished Inquiry Starts For Third Quarter

Cold Finished Prices, Page 67

Pittsburgh—Producers of cold finished steel bars are expected to continue the present 2.10c, Pittsburgh, figure for third quarter. Some formal inquiry is out for that period. New business and shipments decline slowly. Shipments have been receding for a number of weeks, reflecting the recent moderation in automotive activity while new business indicates no near future improvements in that direction. Requirements of miscellaneous users are lighter than a month ago.

Cleveland—Books of some local makers of cold-finished bars have not yet been opened for third quarter, pending price decision. It may go to 2.15c, Cleveland. Prompt material still is available to 2.10c and some still is being billed against 2.00c arrangements of long standing. Consuming demand among the automotive industries is about the same as last month. Other lines are dull.

Plates

Bridge Requirements Sustained —4000 Tons Required for Gas Holder, 4500 Tons for Piling

PLATE PRICES, PAGE 67

Chicago—Plate and structural mills are the only finishing units with orders approaching the size of backlogs. The next three weeks will see continued active shipments of skelp for pipe line work to Milwaukee, averaging 5000 to 8000 tons weekly. Third quarter contracting has not been undertaken, though it is understood the base price will be 1.70c. Miscellaneous manufacturing orders are slow, but plate requirements for bridge work are steady. Oil tank inquiry remains light. Plate mills are operating about 50 per cent.

New York—Plate prices are unchanged at 1.75c, base, Coatesville, Pa. Demand is dull. The Geehegan Contracting Co., Brooklyn, N. Y., is expected soon to place 300 tons of plates for 60-inch pipe for a disposal plant at Ward's island. The New York department of water supply will issue specifications in about two weeks for large size steel pipe.

Philadelphia—Inquiry for a gas holder, requiring 4000 tons of plates, for the United Gas Improvement Corp., is the only feature in a dull market. Carload lots bring 1.75c, base, Coatesville, Pa., the market having been untested with larger orders in the past week.

An award is expected in about 30 days on three fertilizer boats for the Tennessee Corp., requiring a total of 3300 tons of steel, two-thirds of which will be plates. Thomas D. Bowes, Philadelphia, is the architect.

Pittsburgh—Plate demand is fairly well sustained. Included in new business are two dredges requiring 800 tons of plates and shapes for the United States engineers. The Ellicott Co., Baltimore, was low bidder on a dredge for New York city. Tank work continues quiet and plate requirements of pipe line producers remain light. Plates continue 1.65c, Pittsburgh.

Cleveland—Plate activity continues low except for occasional orders from boiler manufacturers. Tank work is quiet. Ship repairs are completed and no new ship inquiries are out. Standard Oil Co. of Kentucky, Louisville, Ky., is said to be inquiring for a number of oil barges for use on the Ohio river. Some Ohio builders are interested in an inquiry from the East for two or three gas holders. Plates continue 1.65c, Pittsburgh, with little interest in third quarter. Some orders for universal plates, 2½ inches thick and 80 feet long for shovel booms were placed recently.

Contracts Placed

300 tons, sheet piling, United States engineer, Nashville, Tenn., to Carnegie Steel Co., Pittsburgh.

Contracts Pending

4000 tons, gas holder for United Gas Improvement Corp., Philadelphia.

4000 tons, sheet piling, various projects at Cleveland.

2200 tons, three fertilizer boats, for Tennessee Corp. Thomas D. Bowes, Fifth and Chestnut streets, Philadelphia, architect.

1000 tons, pipe line dredge, for New York city; Ellicott Co., Baltimore, low bidder.

800 tons, two dredges, for United States engineers, Washington; Marietta Mfg. Co., Marietta, O., low bidder.

233,200 linear feet of sheet piling, in lengths 28 to 77 feet, for United States Engineers' office, Memphis, Tenn., for Ashport-Golddust beach; bids June 24.

500 tons, sheet piling, pier for National

Dock & Terminal Co., Camden, N. J.; action expected this week.
500 tons, 24 and 30-inch welded steel pipe, Vancouver, B. C. Bids received.

Tin Plate Production Steady; Price May Be Extended

Tin Plate Prices, Page 67

Pittsburgh—Tin plate specifications and operations are steady following several weeks of declining activity. Production holds around 65 to 70 per cent with schedules of some independent producers still close to capacity. Demand from leading consumers is fairly well maintained. No announcement has been made regarding a change in tin plate price for the second half.

New York—Although it is not in accordance with the usual practice in recent years, some factors in the trade here believe the leading seller will soon announce prices on tin plate for the second half. Owing to a decline in pig tin some large consumers are pressing for lower figures.

Iron Ore Stocks Larger as Shipments Lag

Iron Ore Prices, Page 78

Cleveland—Shipments of iron ore from Lake Erie ports to interior furnaces are little more than one-fourth of what they were last year to this time. The Lake Superior Iron Ore association reports receipts and shipments for the season and balances on dock at Lake Erie ports, June 1, as follows:

Port	Receipts	Shipments	Dock Balance June 1, 1931
Buffalo	58,606	5,787	3,472
Erie	.....	217	60,132
Conneaut	148,141	409,156	1,520,628
Ashtabula	56,257	303,122	1,769,255
Fairport	35,705	90,974	342,409
Cleveland	214,246	230,192	993,974
Lorain	65,607	39,011	118,695
Huron	.....	.....	321,796
Toledo	29,691	46,426	16,741
Total	608,253	1,124,885	5,147,102
Comparative year ago	3,997,258	4,074,228	4,252,790

Receipts for the season to June 1 at other lake ports follow:

Port	Tons
Detroit	154,922
Indiana Harbor	201,147
Gary	107,769
South Chicago—local fees	272,233
South Chicago—interior fees	6,159
Sault Ste Marie, Ontario	19,991
Point Edward, Ontario	.....
Total	762,221
Comparative 1 year ago	2,100,005

Railroads

Rail Releases Confined to Miscellaneous Needs—Car Demand Small—300 Subway Cars Up

TRACK MATERIAL PRICES, PAGE 67

New York—With plans nearing completion, early issuance of the local board of transportation's proposed inquiry for 300 subway cars is indicated. Twenty cars represent the total number of domestic freight cars placed in May. This is one of the smallest totals ever reported, but might be augmented slightly when full returns of cars built in company shops are available. Following is a comparative statement:

	1931	1930	1929	1928
Jan.	100	5,072	13,196	4,160
Feb.	50	17,027	15,944	10,220
March	2,166	6,118	12,023	2,958
April	2,798	1,997	8,205	6,043
May	20	1,392	7,562	2,531
June	.....	998	5,886	2,422
July	.....	1,389	341	582
Aug.	.....	1,111	2,854	677
Sept.	.....	576	4,517	1,378
Oct.	.....	4,116	19,506	2,853
Nov.	.....	2,621	6,361	6,140
Dec.	.....	2,729	9,710	4,799
Total	5,134	45,146	106,105	44,763

Pittsburgh—Several inquiries are being received from railroads for third quarter tonnage but in each case volume is small. Specifications continue quiet and shipments still are being deferred on considerable rail and track accessory tonnage. The car market continues light.

Cleveland—Railroads appear to be taking out their rail tonnage at a slightly improved rate. New inquiry, however, is absent. The same applies to track material. Cleveland Electric Illuminating Co. bought two hopper cars from Bethlehem Steel Co.

Chicago—Scattered, small miscellaneous rail orders are being closed. Track fastening sales of about 1500 tons were up to the recent weekly average. Rail mill output has been reduced to silghtly under 40 per cent. Western carriers have slowed down rail shipments preceptibly in the last week. Some indications are that despite the recent active shipments, all material contracted for spring and summer delivery may not be ordered out, and that a more marked reduction in rail mill operations may occur soon. One road released 2000 tons of rails against its primary contract.

Birmingham, Ala.—Seaboard Air Line placed 3558 tons of rails with Tennessee Coal, Iron & Railroad Co., Ensley, Ala., the third order this year. The other two orders called for 5000 and 4000 tons, respectively. Ensley works is busy on heavy rail orders placed during January.

Car Orders Placed

Cleveland Electric Illuminating Co., Cleveland; two 70-ton hopper cars, to Bethlehem Steel Co., Bethlehem, Pa.

Rail Orders Placed

Seaboard Air Line, 3558 tons, to Tennessee Coal, Iron & Railroad Co., Ensley, Ala.

Car Orders Pending

Board of transportation, New York, 300 subway cars, plans nearing completion, noted in a previous issue as contemplated.

Obituaries

(*Concluded from Page 23*)

seller of foundry supplies, died May 26 as a result of an automobile accident.

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Robert C. Higgins, general superintendent of Malleable Steel Range Co., South Bend, Ind., for the past 12 years, died recently.

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Harry W. Bundy, 55, chairman, Bundy Tubing Co., Detroit, died June 2. Born in Minneapolis, he located in Detroit in 1912, becoming factory manager of Diamond Mfg. Co. He later organized his own to make automobile gasoline and oil feed lines.

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Edgar F. Viles, 55, for many years president of Waltham Screw Co., Waltham, Mass., died at Concord, Mass., May 20. He was born in Waltham and was graduated from Brown university in 1896.

□ □ □

William P. Parker, 60, engineer, died at Philadelphia, June 6. He was Philadelphia representative of the Underpinning & Foundation Co., New York, and acting general manager of Ballinger & Perrot, Philadelphia, architects and engineers. He also had been connected with the Pittsburgh Bridge & Iron Works, Keystone works of American Bridge Co., the Cambria Steel Co., the A. M. Blodgett Construction Co., Kansas City, Mo., and Concrete Steel Engineering Co., New York.

Structural Shapes

25,000-ton Office Building at Chicago Aids Total—Most Awards Below 1000 Tons Each—Much Bridge Work Pending, Including 25,000-Ton Ohio River Unit

STRUCTURAL SHAPE PRICES, PAGE 67

Chicago—Structural mills at 40 to 45 per cent hold up better than had been expected. Leading recent structural steel business is the award of 25,000 tons for the Marshall Field Estate building. Some third quarter tonnage has been booked in the nature of extended protection on specific jobs running into most of that period. The base price for plain material is 1.70c, Chicago. Bridge and public work is maintaining the steady volume of the last several months. Fabricators here expect to submit bids by June 15 on the Louisville & Nashville bridge at Henderson, Ky., 25,000 tons.

Boston—Structural demand picks up slowly. Two awards are noted, 260 tons, and one contract is pending, 143 tons, for a state bridge at Palmyra, Me.

New York—Lettings and new inquiry for structural steel are light. Several public projects are slow to develop. Bids will be taken early in September on the Port Authority inland freight terminal which will take 22,500 tons. Cleveland and Binghamton, N. Y., contractors are low on armories at Syracuse and Kingston, respectively. Fabricated structural prices are easy, most jobs bringing out widely differing figures.

Pennsylvania railroad opens bids June 23 on structural steel material and on aluminum cable.

Philadelphia—Although buying is light, structural inquiry is fairly well maintained. Shapes are 1.76c, Philadelphia.

Pittsburgh—Specifications for plain structural material show a slight improvement over the past several weeks but still are seasonally quiet. Prospects for the next 30 to 60 days are fair based on contracts already placed. Activity in this district is quiet with awards and inquiries small. Plain material is quoted 1.65c, Pittsburgh.

Cleveland—Shape inquiries are scarce and little interest is manifest for third quarter. H. K. Ferguson Co., general contractor on the Addressograph-Multigraph Corp. plant, will not complete plans for a week or more, when bids on the steel will be asked. Between 400 and 500 tons are involved in Ohio state bridges, bids on which were opened June 9. Bids close early in July on the Juvenile courts building here, plans for which now are out. Plain material sellers report no deviation from the 1.65c, Pittsburgh, price. Structural orders have been fairly good from shovel manufacturers for shovels being built for Russia and for Hoover dam.

Milwaukee—Common council has rejected the proposal of its buildings and grounds committee that the nation's architects compete on plans for Thirty-fifth street viaduct. Department of public works will take bids about June 15 on plans now being drawn by its engineers. Four Milwaukee fabricators have offered to furnish steel, 6000 to 7000 tons at cost by way of unemployment relief.

Birmingham, Ala.—Shapes lag, although several contracts are being bid upon. Recent lettings call for less than 100 tons apiece.

Contracts Placed

25,000 tons, Marshall Field Estate building, Chicago, to McClintic-Marshall Corp., Bethlehem, Pa.

12,500 tons, office building, Forty-second street and Park avenue, New York, to McClintic-Marshall Corp.

4400 tons, postoffice, at Kansas City, Mo., to McClintic-Marshall Corp., Chicago; Ring Construction Co., Minneapolis, Minn., general contractor at $2,330,000; reported two weeks ago as going to unstated fabricator.

4080 tons, bridges, Illinois highway department, Chicago, to Duffin Iron Co., Chicago.

2200 tons, Skervin hotel, Oklahoma City, Okla., to McClintic-Marshall Corp., Bethlehem, Pa.

1500 tons, reconstruction of Second Narrow bridges, North Vancouver, B. C., to Dominion Bridge Co. Ltd., Montreal, Que.

1000 tons, prison buildings, Attica, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.; J. Weinstein Building Corp., general contractor.

835 tons, office building, Grand Concourse and East Fordham road, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.; Constantin Wagner, general contractor.

800 tons, light channels for less-carload containers, Pennsylvania railroad, to unstated fabricators, for use in own shops.

800 tons, bridge, Livonia avenue, Brooklyn, N. Y., to American Bridge Co., Pittsburgh; Kniden Construction Co., contractor.

800 tons, postoffice, Oakland, Calif., to Judson-Pacific Co., San Francisco.

732 tons, cell blocks, Clinton prison, Dannemora, N. Y., to Van Dorn Iron Works Co., Cleveland.

700 tons, bridge for Chicago, Burlington & Quincy railroad at LaSalle, Ill., to Mt. Vernon Bridge Co., Mt. Vernon, O.

617 tons, state highway bridge, New York, to Lackawanna Steel Construction Co., Buffalo.

580 tons, bridge, Red river, Wilbarger county, Tex., to Mosher Steel & Machinery Co., Dallas, Tex.; W. S. Crawford Co., Dallas, general contractor, listed last week as 380 tons.

550 tons, coliseum, Tulsa, Okla., to Muskogee Iron Works, Tulsa, Okla.

500 tons, apartment, San Marino avenue, Los Angeles, to unstated interest.

500 tons, Masonic home, Cockeysville, Md., to Dietrich Bros., Baltimore; M. D. Long Co., contractor.

450 tons, buildings, Tulsa state fair, Tulsa, Okla., to Muskogee Iron Works, Muskogee, Okla., Manhattan Construction Co., Tulsa, contractor.

351 tons, passenger station No. 52, New York Central railroad, New York, to Easton Strutcural Steel Co., Easton, Pa.

350 tons, garage, Lafayette and Fourth streets, New York, to Easton Structural Steel Co., Easton, Pa.; Burk-Lafayette Corp. builder.

325 tons, state warehouse, Albany, N. Y., to Eastern Bridge & Structural Co., Worcester, Mass.

318 tons, garage at Washington, to H. R. Blagg Co., Dayton, O.; Murch Bros., St. Louis, general contractors.

300 tons, highway bridge, Saginaw, Mich., to American Bridge Co., Chicago.

300 tons, 4-story office building, West Thirtieth street and Broadway, New York, to Easton Structural Steel Co., Easton, Pa.; Jacob Schlesinger Inc., general contractor.

270 tons, apartment, Ellis and Franklin streets, San Francisco, to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, dock shed No. 3, lower Manhattan, N. Y., to Ingalls Iron Works Co., Verona, Pa.; Court Construction Co., contractor.

250 tons, highway bridge, Marinette, Wis., to Wausau Iron Works, Wausau, Wis.

250 tons, tunnel under Canadian Pacific tracks, Lachine, Que., to Dominion Bridge Co. Ltd., Montreal, Que.

250 tons, highway bridge, Williamson county, Ill., to Vincennes Bridge Co., Vincennes, Ind.

210 tons, grade crossing Boston & Maine railroad, Valley Falls, N. Y., to Phoenix Bridge Co., Phoenixville, Pa.

Awards Compared

	Tons
Awards this week	**61,284**
Awards last week	**26,704**
Awards two weeks ago	**34,106**
Awards this week in 1930	**30,992**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**39,192**
Av. weekly awards, May	**23,457**
Total awards to date, 1930	**825,381**
Total awards to date, 1931	**940,613**

200 tons, theater, Charlottesville, Va., to Roanoke Bridge & Iron Works, Roanoke, Va.; D. J. Phipps Co., general contractor.

200 tons, highway bridge, Clarksdale, Ill., to Clinton Bridge Works, Clinton, Iowa.

175 tons, bridge, Erie railroad, Oak Ridge, N. J., to Harris Structural Steel Co., New York.

165 tons, highway bridge, Yerkes, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

160 tons, bridge at Fryeburg, Me., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

150 tons, bridge over Sydenham river, Becker, Ont., to Canadian Bridge Co., Ltd., Walkerville, Ont.

150 tons, 3-story hospital, State Reformatory for Women, Clinton, N. J., to Jersey Steel Co., Trenton, N. J.

150 tons, Lucas county bridge, Toledo, O., to American Bridge Co., Pittsburgh.

150 tons, high school, Paulsboro, N. J., to Bethlehem Febricators Inc., Bethlehem, through Steel Service Co.

150 tons, parochial school, Wilkesbarre, Pa., to Weatherly Steel Co., Weatherly, Pa.

150 tons, bridge, New York state, to American Bridge Co., Pittsburgh.

150 tons, furnace repairs, Colorado Fuel & Iron Co., Pueblo, Colo.

150 tons, hangar for Century Airways Inc., municipal airport, Chicago, to American Bridge Co., Chicago.

150 tons, store at Huntsville, Ala., for S. H. Kress & Co., New York, to Virginia Bridge & Iron Co., Birmingham, Ala.

150 tons, highway bridge, Minnesota Highway commission, to Lakeside Bridge & Steel Co., North Milwaukee, Wis.

120 tons, parts for dam No. 1, Cumberland river, United States engineers, Nashville, Tenn., to Ingalls Iron Works Co., Birmingham, Ala.

120 tons, United States veterans' hospital, Tuscaloosa, Ala., to Decatur Iron & Steel Co., Decatur, Ala.

120 tons, police station, Ozone Park, Queens, N. Y., to Thor Structural Steel Co., Brooklyn, N. Y.

115 tons, store, Flushing, N. Y., to Berkshire Iron orks, Brooklyn, N. Y.

112 tons, bridges, Union Pacific railway, to McClintic-Marshall Corp., Bethlehem, Pa.

109 tons, store building, Detroit, to Whitehead & Kales Co., Detroit.

100 tons, theater, Glenn Falls, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, additional, hospital, Chauncey street, Brooklyn, N. Y., to Brooklyn Iron Works, Brooklyn.

100 tons, boiler house, Hamilton, O., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, store, W. T. Grant Co., West 181st street, New York, to Dreier Iron Works, Bronx, N. Y.

100 tons, grandstand at St. Catharines, Ont., to Foster-Wheeler Co., St. Catherines.

100 tons, state bridge, Cambridge, Vt., to Spooner Bridge Co., Cambridge.

100 tons, structural and miscellaneous, three barracks, Langley Field, Va., to Soule-Hoffman Co., Charlotte, N. C.; Townsend Lumber Co., Anderson, S. C., general contractor.

100 tons, estimated, tunnel enlargement under Canadian Pacific railroad track at Lachine, Que., to Dominion Bridge Co. Ltd., Montreal, Que., at its price of $24,900.

100 tons or more, postoffice, Dubbock, Tex., to Ben Sibbitt Iron & Foundry Co., Wichita, Kans.; reinforcing steel to Koerner Engineering Co., St. Louis; William MacDonald Construction Co., St. Louis, general contractor.

100 tons or more, nurses' home John Sealey hospital, Galveston, Tex., to Alamo Iron Works, San Antonio, Tex.; J. E. Morgan & Sons, El Paso, Tex., general contractors.

Contracts Pending

25,000 tons, bridge at Henderson, Ky., for Louisville & Nashville railroad; bids June 15; 20,000 tons for main spans and 5000 tons for approaches.

12,000 tons, bank and office building, Nassau, Wall and Pine streets, New York.

4300 tons, postoffice, Kansas City, Mo.; general contract awarded Ring Construction Co., Minneapolis, on its bid of $2,330,000; project listed in shape awards of May 28 to unstated interest.

1200 tons, 15-story courthouse tower extension, Elizabeth, N. J., Oltmer Iron Works, Hoboken, N. J., low bidder June 8 at Trenton, N. J.

1100 tons, Islais creek bridge, San Francisco; general contract award rescinded.

1000 tons, arena, Maple Leaf Gardens Co., Toronto, Ont.

1000 tons, addition, Hotel Traymore, Atlantic City, N. J.; preliminary plans up for owners' approval.

1000 tons, passenger station, Erie railroad, Jamestown, N. Y.; bids received at New York June 25.

1000 tons, substation, Commonwealth Edison Co., Garland court, Chicago.

1000 tons, state highway bridges, New York, in addition to same tonnage pending last week.

1000 tons, estimated, police headquarters building, Buffalo, to cost $1,000,000; city council has ordered plans drawn.

1000 tons, estimated, Marine hospital, Seattle; general contract awarded N. P. Severin, 22 West Adams street, Chicago, on his bid of $1,269,900.

600 tons, public school, Wissahickon avenue, Philadelphia.

500 tons or more, postoffices at Atlanta, Tex., Lafayette, Ind., Key West, Fla., Winthrop, Mass., Unionville, Mo., bids close June 3 June 26, June 26, June 29 and July 1, respectively.

500 tons, two buildings, Penn State college, State College, Pa.

500 tons, South Carolina highway bridges.

400 tons, office building, Jamaica, N. Y.

400 tons, airway beacon towers, department of commerce, Washington; Missouri Rolling Mills Co., St. Louis, low.

300 tons, Union Theological seminary, New York.

300 tons, estimated, Y.M.C.A., Harrisburg, Pa.; bids June 23.

300 tons, station, Erie railroad, Jamestown, N. Y.

265 tons, bridge, Brown-McCulloch counties, Tex.; Austin Bridge Co.,

(*Concluded on Page 75*)

Concrete Bars

Hydroelectric Plant in Texas, 1800 Tons, Let—600-ton Penitentiary Up in Eastern Pennsylvania—Miscellaneous Inquiry Fair—Prices Steadier in the East

REINFORCING BAR PRICES, PAGE 67

Chicago—Reinforcing bar shipments hold up well, owing to the numerous bridge and road projects. Rail steel bars for road work are steady at 1.65c to 1.75c. A motor association building in Chicago calls for 400 tons, and the courthouse at St. Paul, 450 tons.

Boston—Seven small state bridges in Maine were awarded Bancroft & Martin Rolling Mill Co. Four jobs are pending, aggregating 700 tons, including a laboratory at Cambridge, Mass., 300 tons.

New York—Concrete bar prices are steadier, especially in small shipments. Fresh inquiry is light, but includes several hundred tons for sewers. Although pending tonnage is being gradually reduced, several large projects still are up. The inland freight terminal to be erected by the Port of New York Authority will take close to 3500 tons. Bids will go in early in September.

Philadelphia—An award of 600 tons of reinforcing bars for Eastern State penitentiary, Gratersford, Pa., may be placed shortly by Day & Zimmerman Inc. A standpipe foundation at Lancaster, Pa., 115 tons, is pending. Prices are unchanged, 1.55c to 1.60c, Pittsburgh.

Buffalo—One district seller booked 150 tons of rail steel for the marine airport job. New inquiries of small

(*Concluded on Page 75*)

Awards Compared

	Tons
Awards this week	**6,645**
Awards last week	**9,040**
Awards two weeks ago	**12,357**
Awards this week in 1930	**3,698**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**7,253**
Av. weekly awards, May	**8,131**
Total awards to date, 1930	**168,994**
Total awards to date, 1931	**174,069**

Strip

Specifications Show Little Decrease—Business Gives No Test of Recent Advance

STRIP PRICES, PAGE 67

Pittsburgh—Specifications for strip still are quiet but show little additional decrease. Automotive buyers are slow to close on recent inquiries and there has been little opportunity to test the advance of $1 a ton announced by producers on third quarter hot strip business. Mills are quoting 1.55c and 1.65c for the two sizes of hot strip with cold strip continuing 2.15c to 2.25c. Mill operations average around 35 to 40 per cent although schedules are being arranged only a few days in advance, due to the hand-to-mouth character of buying..

New York—While there has been little test, hot prices are being generally quoted at 1.55c, Pittsburgh, for wide, and 1.65c for narrow. Cold-rolled strip is 2.15c, Pittsburgh.

Philadelphia—Steel strip is dull and untested at 1.55c to 1.65c, Pittsburgh, for hot-rolled and 2.15c, Pittsburgh, for cold-rolled.

Youngstown, O.—Stripmakers, as also is the case with several important sheetmakers, are making initial sales for third quarter under the new classification for sheets and strip. These have not been as large as might be, but they are being made, is the point. However, most strip purchases for the narrower widths are for quick shipments, mostly immediate delivery. Cold-rolled strip is in less urgent demand than hot-rolled. Quotations have not changed on the old sales basis for these quick shipment materials.

Cleveland—Some hot strip tonnage still remains unspecified at 1.50c and 1.60c, Pittsburgh, for wide and narrow, respectively. However where scattered opportunity to quote occurs, higher figures by $1 a ton are named, books having been opened for that period. Consumers are indifferent about committing themselves for extended deliveries. Larger tonnage users are quoted 2.15c, Cleveland, on cold strip while the small buyer is asked to pay 2.25c. Little tonnage is moving.

Chicago—Hot rolled strip mills are quoting nominally 1.65c to 1.75c, Chicago, for third quarter, on the wider sizes, and 1.75c for material under 6 inches. Virtually no third quarter material has been booked as forward interest is decidedly light. Sales recently have been closed on the basis of 1.70c for narrow and 1.60c for wider material. Forward contract prices thus are definitely established.

Warehouse Sales at About May Rate

Warehouse Prices, Page 89

New York—Volume thus far holds to the May average. Some report a slight increase the first ten days due to better building. Some price shading is reported. Stocks are not large. Buying is well spread. Foreign steel finds an outlet at low prices.

Boston—Small projects provide warehouses with sufficient business to maintain a slightly better position than other lines of industry.

Philadelphia—Jobbers have reduced prices on drill rods to 75 off on 100 pounds or more, as against 70 off. Demand is unchanged.

Baltimore—While there have been some revisions in sheet prices in adjacent districts, the jobber market here is unchanged. In fact, prices generally have held steady for several weeks. Trading remains light.

Buffalo—Demand for iron and steel shows some improvement. Builders are speeding up operations and are purchasing larger quantities.

Pittsburgh—Business has moderated. Some sheet grades are better than in May. Heavier products are quiet, price reductions offering no stimulant.

Cleveland—Demand upon warehouses is shrinking. June shipments will not equal May's. The bulge which followed revision of quantity extras has disappeared. Unchanged prices are firm.

Detroit—Sales are about equal to the May rate. Jobbers see little ahead to bring increased business except for maintenance and repairs.

Cincinnati — Diversified buying marks demand. Individual orders are light. Activity in building materials continues disappointing.

Chicago—While sales of warehouse steel show no appreciable gain this month, few recessions are noted. Jobbers feel they are holding their own. It is not expected cold strip prices will be reduced here. Day-to-day volume is variable, with orders well diversified.

St. Louis—May closed with receding demand. General tonnage holds up fairly well, highway and engineering projects originating some orders. Reports of price shading persist.

Steel Operations Down to 40 Per Cent Average

Youngstown, O.—Up one point to 42 per cent, the first gain in three months in district operations is attributed to a moderate advance in pipe mill operation. Youngstown Sheet & Tube Co. is estimated to be operating 33 per cent, a gain in open-hearth operating being registered at Campbell works. Republic Steel Corp. gained 8 points at Haselton, going to 50 per cent but a loss at Warren, O., leaves it at 45 per cent. Truscon Steel Co. is on a 75 per cent basis. Sharon Steel Hoop Co. declined to 50 per cent at Lowellville, O., as against 66 per cent last week. Mahoning Valley Steel Co. operates six sheet mills at Niles. Empire Steel Corp. remains idle. Newton Steel Co. is standing still at Newton Falls, O., filling all its orders at Monroe, Mich.

Philadelphia—Eastern ingot operations are unchanged at 37 per cent. A leading mill is on a 43 per cent basis.

Buffalo — Readjustments of open-hearth schedules with one producer dropping a unit and another putting on a furnace, leaves 15 in operation. The 40 per cent basis is unchanged.

Pittsburgh—Ingot production is a shade lower at 40 per cent. Most other departments are unchanged. Blast furnaces are steady at 19 active out of 54 steelworks stacks. Sheet production continues at 35 to 40 per cent and tin plate 65 to 70. Strip and pipe hold at 35 to 40.

Cleveland—Three more open-hearths banked here reduces ingot operations to 44 per cent from last week's 53 per cent basis. Fifteen open-hearth furnaces are on out of a possible 34. Within the week one interest put out two and another made one more idle.

Chicago — Further reduction in steelworks blast furnace activity to 12 out of 36 stacks has had little effect on ingot output because of the larger scrap consumption. Ingot output is down a little to a range of 40 to 42 per cent. The leading interest has banked a furnace at South Chicago. Two at Gary continue banked. Finishing mills are relatively high at 40 to 50 per cent operations. Rail mills are slightly below 40 per cent.

Birmingham, Ala.—Steel mills are estimated still at 50 per cent. Ingots in yard stocks will suffice for contemplated orders for some time.

Concrete Bars

(*Concluded from Page 71*)

size are especially numerous this week.

Pittsburgh—Reinforcing bar demand continues fairly active and is heavier than a month ago. Volume of pending business is good and prospects are bright for continuation of present demand over the next several weeks. Mills usually quote 1.65c for stock lengths and 1.90c for cut lengths. Some shading on the former still is noted.

Contracts Placed

1800 tons, hydroelectric plant, Llano, Tex., Emery, Peck & Rockwood Co., Chicago, to Colorado Fuel & Iron Co., Pueblo, Colo., through Austin Bros., Dallas, Tex. Fegles Construction Co., Minneapolis, contractor.

800 tons, Outer Drive bridge, Chicago, divided among several unstated fabricators.

550 tons, three barracks, Langley Field, Va., to Southern General Fireproofing Co., Atlanta, Ga.; Townsend Lumber Co., Anderson, S. C., general contractor.

500 tons, bridge over Desplaines river at Seventy-ninth street and Manheim road, Chicago, to E. J. Albrecht Co., Chicago.

485 tons, United States veterans' hospital, Tuscaloosa, Ala., to Campbell Coal Co., Atlanta, Ga.; H. B. Nelson Construction Co., Columbus, Ga., contractor.

245 tons, Virgin river bridge, Clark county, Nev., to unstated interest.

230 tons, Livonia avenue bridge, Brooklyn, N. Y., to Concrete Steel Co., New York; Kniden Construction Co., Brooklyn, N. Y., general contractor.

200 tons, apartment, San Marino avenue, Los Angeles, to unstated interest.

200 tons, Edward L. Hines school of business, Notre Dame university, South Bend, Ind., to Olney J. Dean & Co., Chicago.

190 tons, Wolf run bridge, Cleveland, to Truscon Steel Co., Youngstown, O.; Hecker-Moon Co., Cleveland, contractor.

150 tons, Institute for Women for California, at Techachapi, Calif., to unstated interest.

150 tons, buildings, Tulsa state fair Tulsa, Okla., to Patternson Steel Co., Tulsa.

150 tons, rail steel, Buffalo marine airport, to Buffalo district fabricator.

150 tons or more, seven small bridges in Maine, to Bancroft & Martin Rolling Mill Co., Portland, Me.

150 tons, state bridge, McLennan county, Tex., to Southern States Steel Co., Dallas, Tex.; W. S. Crawford Co., Dallas, general contractor.

135 tons, detachment barracks, Fort Jay, Governors Island, N. Y., to Carroll-McCreary Co. Inc., Long Island City, N. Y.; Neinken-Mertz Construction Co., contractor.

125 tons, state bridge at Westfield, Mass., to Concrete Steel Co., New York.

125 tons, bridge, Brown-McCulloch counties, Tex., to Austin Bros., Dallas, Tex.; Austin Bridge Co., Dallas, general contractor.

110 tons, schoolhouse in Dorchester district, Boston, to Concrete Steel Co., New York.

100 tons or more, theater, Charlottesville, Va., to Truscon Steel Co., Youngstown, O.; D. J. Phipps Co., Roanoke, Va., general contractor.

100 tons, $150,000 hospital, Fort Humphreys, Va., to Truscon Steel Co., Youngstown, O.; Jewell-Riddle Co., Sanford, N. C., contractor.

Contracts Pending

2600 tons, Illinois Terminal Warehouse Co., Twelfth and Washington streets, St. Louis; bids opened.

600 tons, eastern state penitentiary, Gratersford, Pa.; general contract to Day & Zimmermann Inc., Philadelphia.

600 tons, welding plant, Western Electric Co., Chicago.

500 tons, packing plant at St. Paul for Swift & Co., Chicago.

450 tons, courthouse, St. Paul; general contract to Foley Bros., St. Paul.

300 tons, laboratory, Massachusetts Institute of Technology, Cambridge, Mass.

260 tons, widening bridge over Santa Ana river, Riverside county, Calif.; bids June 24.

200 tons, city bridge, Chicopee, Mass.

200 tons, two Massachusetts road jobs.

115 tons, standpipe foundation, Lancaster, Pa.

100 tons, building for United States department of agriculture, Yorktown, Va.

100 tons, Metropolitan avenue bridge, department of the plants and structures, English Kills, Brooklyn, N. Y.; bids in.

Structural Shapes

(*Concluded from Page 71*)

Dallas, Tex., general contractor.

250 tons, grade school, Wilmington, Del.; specifications out this month.

250 tons, hydroelectric plant, Llano, Tex.; bids June 15, Emery Peck & Rockwood, Co., Chicago.

250 tons, office building addition, Union Square, New York.

240 tons, bridge near Englewood, N. J.; bids June 22, New Jersey state highway commission, A. Lee Grover, chief clerk, Trenton, N. J. Work also includes 17 tons reinforcing bars.

223 tons, bridges over Rio Puerco and Dry creek, Apache county, Phoenix, Ariz; bids opened.

200 tons, girls' high school, San Francisco; bids being received.

200 tons, Philadelphia House of Correction, Holmesburg, Pa.; general contract to Louis Lombardi & Bro., Philadelphia.

150 tons, Postoffice, Warren, Pa.; general contract to Rosen & Fischer Inc., Chicago, on its bid of $142,790.

143 tons, state bridge, Palmyra, Me.

100 tons, United States veterans hospital, Canandaigua, N. Y.; general contract to L. Balkin Co., Chicago.

100 tons, Famous Players theater, St. Thomas, Ont.; general contract to G. H. Thomas & Son Ltd., Galt, Ont.

100 tons, estimated, colored Y.M.C.A., Harrisburg, Pa.; bids June 23.

100 tons, public school, Wayne, Pa., contemplated.

100 tons, county bridge, Darby, Pa.

Pipe

Line Pipe Inquiry Slackens—Ft. Wayne Wants 3000 Tons—Cast Pipe Prices Weak in East

PIPE PRICES, PAGE 89

Pittsburgh—Line pipe activity again is quiet. While several projects are scheduled for early closing awards are lacking. Standard pipe demand remains dull, although slightly more active than during earlier months of the year. Oil country goods still reflects quietness in that industry while demand for tubes and tubing also is slack. Pipe mill operations continue 35 to 40 per cent.

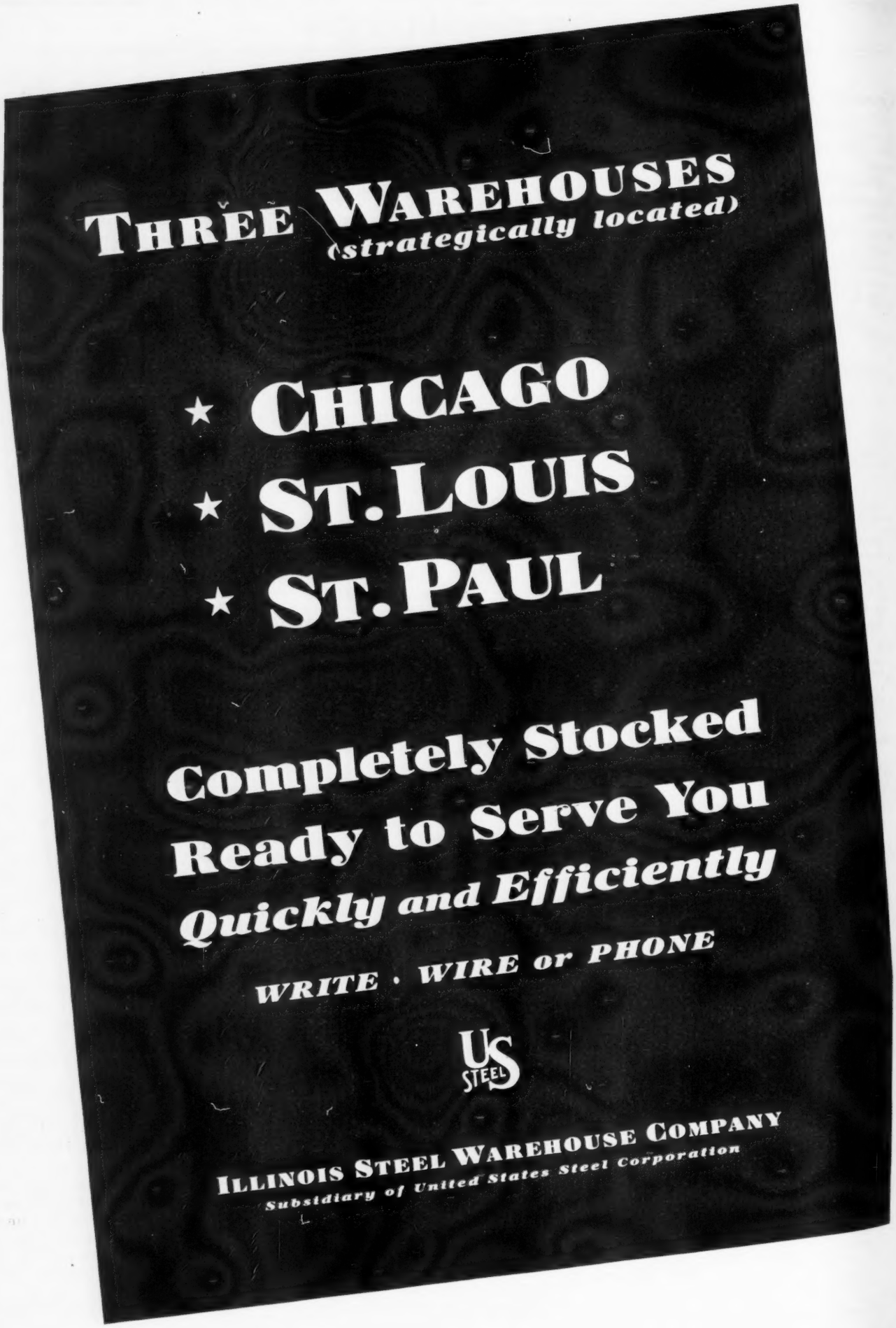
Boston—Award by Madawaski, Me., for 400 tons was practically the only business placed last week in cast pipe here. Warren Foundry & Pipe Co. is low on 142 tons for Lynn, Mass.

New York—Price weakness continues to overshadow cast pipe. Pending tonnage is fairly large. Close to 2000 tons was placed, including 800 tons for waterlines on Manhattan. Fresh inquiry includes about 1750 tons for Ticonderoga. Bids close June 15 on a large tonnage for the Passaic Valley Water commission, Paterson, N. J. About 12,500 feet, 36-inch, may go steel as figures are being asked on steel and cast. One New Jersey foundry is reported unusually active with a good backlog. Bids went in last week on several hundred tons of welded steel pipe for navy yards.

Chicago—Following substantial sales activity of late winter and early spring, the cast pressure pipe market is slowing down steadily. Shipments remain steady on laying programs. Private business is confined to scattered carlots. Fox Point, Wis., shortly will place 1150 tons of 6 to 12-inch. Chicago delivered prices on 6 to 24-inch remain $42 to $44 for municipal work.

Cleveland—Tubular products continue quiet, standard full weight merchant pipe orders being for single carloads. Conduit is slightly more active, one inquiry being current for several hundred tons for an industrial plant here.

Birmingham, Ala.—Demands for


THREE WAREHOUSES
(strategically located)
★ CHICAGO
★ ST. LOUIS
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Completely Stocked
Ready to Serve You
Quickly and Efficiently
WRITE · WIRE or PHONE
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ILLINOIS STEEL WAREHOUSE COMPANY
Subsidiary of United States Steel Corporation

cast pressure pipe are slow and aggregate bookings are small. Reports from the West and other sections lead to expectations that specifications shortly will be heavier.

Cast Pipe Placed

1800 tons, cast pipe for New Castle Water district, New York, to R. D. Wood & Co., Florence, N. J.; Smight Bros., Pelham, N. Y., contractors.

800 tons, 12-inch cast pipe for Manhattan, N. Y., to Donaldson Iron Works, Emaus, Pa.; Atlas Contracting Co., contractor; listed last week as going to unstated eastern foundry.

750 tons of cast pipe, a 9-mile water line costing $27,000 at Boulder City, Nev., in connection with the Hoover dam, to Pacific States Cast Iron Pipe Co., Provo, Utah.

650 tons, 6 to 10-inch cast pipe for Canajoharie, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.; Charles C. Hopkins, Rochester, N. Y., engineer.

400 tons, 20 to 24-inch cast pipe for Huron, S. D., awarded to unstated foundry through contractor.

400 tons, 6 and 12-inch cast pipe for Madawaski, Me., to Donaldson Iron Works, Emaus, Pa.

200 tons, 6-inch cast pipe for Freeburg, Ill., to McWane Cast Iron Pipe Co., Birmingham, Ala.

199 tons, 6-inch class B cast pipe for Calistoga, Calif., to C. G. Claussen & Co., San Francisco.

Cast Pipe Pending

26,800 feet, 2½-inch wrought iron pipe, conduit, routes 1, 4 and 6, section 6, Christies lane to Fort Lee bridge plaza, New Jersey; bids June 22, New Jersey State Highway commission, Trenton, N. J., A. Lee Grover, chief clerk.

1750 tons, 10 to 14-inch cast pipe for Ticonderoga, N. Y.; bids June 25.

1150 tons, 4, 6, 8 and 12-inch cast pipe for Fox Point, Milwaukee county, Wis.; Alabama Pipe Co., Birmingham, Ala., low at $42.90 a ton on 4-inch and $39.90 a ton on the other sizes. Other bidders and bids were: Glamorgan Pipe & Foundry Co., Lynchburg, Va., $43.90 on 4-inch and $42.90 on other sizes; United States Pipe & Foundry Co., Burlington, N. J. $45.65 and $42.65; and James B. Clow & Sons, Chicago, $45.80 and $42.80.

840 tons, 24-inch cast pipe for Passaic Valley Water commission, Paterson, N. J.; bids June 15. Bids will also be taken on 12,500 feet 36-inch steel or cast iron.

142 tons, 6 and 8-inch cast pipe for Lynn, Mass.; Warren Foundry & Pipe Co., Phillipsburg, N. J., low.

Unstated tonnage, 49,600 feet cast pipe, up to 12-inch, for Hoover Dam project, Boulder City, Nev.; bids June 30.

Steel Pipe Pending

3000 tons, 4 to 8-inch steel pipe for Ft. Wayne, Ind.

500 tons or more, welded steel pipe for eastern and western navy yards; bids in.

Unstated tonnage, 12,500 feet 36-inch welded steel pipe for Passaic Valley Water commission, Paterson, N. J.; alternate bids asked on cast.

Wire

Prices Uneven as Shading Is Met on Nails—Mills Open Third Quarter Books, Unchanged

WIRE PRICES, PAGE 67

Chicago—Third quarter books on wire products are opened at extensions of existing prices, but forward interest is so negligible that it is not expected much progress will be made soon in establishing a third quarter schedule. Wire nails are quoted $1.85, Chicago or western mills, while plain wire is 2.25c. Annealed fence wire is quoted 2.40c to 2.50c. Jobber and dealer stocks are much reduced and it is indicated they may not be replenished soon. Manufacturers' wire is declining. With June well along, seasonal influences are more significant and gradual tapering in merchant products is expected at least until August. Mill operations are 35 per cent.

Worcester, Mass.—Business sentiment has improved without wire production showing any gain. Wickwire Spencer Steel Corp.'s wire rope mill to be erected in Palmer, is still preliminary. Plants are on summer schedules. Third quarter price schedules are expected momentarily.

Philadelphia—Wire holds at 2.20c, Pittsburgh, and nails at $1.80 to $1.90, Pittsburgh. Announcement of third quarter prices is awaited.

Pittsburgh—Wire business is dull but has declined little recently, following a substantial drop in incoming business during May. Producers defer announcement of third quarter prices although little change is expected from present levels. Quotations are rather spotty, the market for wire nails being fairly steady at $1.90 in some sections while $1.80 is rather generally quoted in others. Plain wire is 2.20c with wire rods usually $35. Specifications for manufacturers' wire are declining and demand from jobbers is light.

Cleveland—While some scattered jobbers are endeavoring to uncover the $1.70 and $1.75 nail prices reported available by a Pittsburgh middleman, mills continue to sell at a $1.90 minimum, with some sales reported at $2 a keg. Wire is more active, at 2.20c to 2.30c, Cleveland, some attractive sales being made to nut, bolt and screw products makers. Various wire fabricators are buying in small quantities, though manifesting little interest in quarterly contracts, with books just opened.

Beaver Dam Pattern Co., Beaver Dam, Wis., which recently moved into a new shop, has increased its capital stock from $7000 to $20,000.

Bolt, Nut, Rivet Prices Hold for Third Quarter

Bolts, Nuts, Rivets Prices, Page 67

Pittsburgh—Third quarter contracts for bolts, nuts and rivets are being issued by manufacturers with prices unchanged at 73 off for bolts and nuts, 2.75c, Pittsburgh, for large rivets and 70, 10 and 5 off for small rivets. Recent specifications continue quiet and show little change from the rate of the past 30 days. Production continues 30 to 35 per cent.

Philadelphia—Prices on bolts and nuts are being reaffirmed for third quarter at 73 off and on rivets at 2.75c, Pittsburgh. However, few contracts have been renewed. Action is expected this week on 75 tons of upset rods for the pier of the National Dock & Terminal Co., Camden, N. J.

Cleveland—Some nut and bolt manufacturers continue to receive fair orders and are operating 40 to 50 per cent. These have low operating costs. High-cost plants are practically down. One large manufacturer here has booked larger orders each successive month this year and believes June will prove no exception. A fair amount of third quarter booking is being done.

Chicago—A number of buyers have signed third quarter contracts on the basis of 73 off for bolts and nuts, unchanged from second quarter. Specifications, which are dropping below May, are expected to be extremely light for the next 90 days. Production still is maintained around 35 to 40 per cent with virtually no backlogs.

National Gets Steel Tubing

New York—National Tube Co., Pittsburgh, on a bid of 18.9c has been awarded 1800 feet of steel tubing, SAE 1025, for the naval aircraft factory, Philadelphia. A contract for which bids were opened several weeks ago calling for round head aluminum alloy rivets has been awarded to Atlas Tack Corp., Fairhaven, Mass. Bids were rejected for 500 ball joint terminals.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	19.91 to 20.91
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00 to 13.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	17.00
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.75
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	9.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00 to 30.00
Pittsburgh, bessemer	29.00 to 30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00
Philadelphia	34.30
Chicago	30.00 to 31.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00 to 36.00
Forging, Philadelphia	40.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00 to 31.00

SLABS

Pittsburgh	29.00 to 30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.50 to 14.00
Washed gravel, import duty paid east, tide, gross ton	19.00

SEAMLESS

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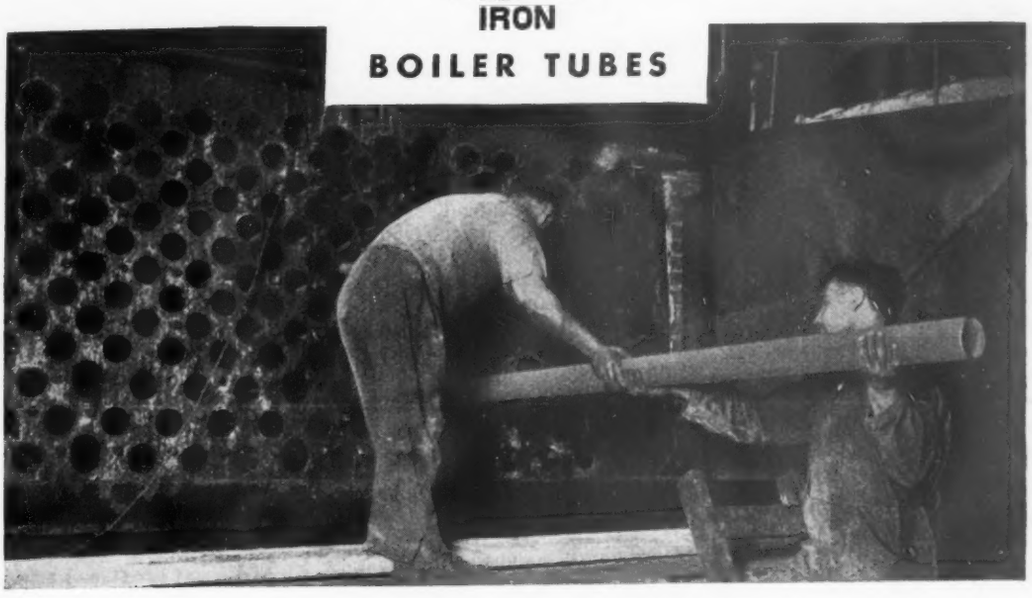
TONCAN
COPPER
Mo-lyb-den-um
IRON
BOILER TUBES



RETUBING?

IF YOU use iron tubes because of their longer life, add the word "TONCAN" to your specifications.

TONCAN IRON tubes have an added resistance to boiler corrosion due to the protective presence of copper and molybdenum.

In addition, TONCAN IRON tubes are made seamless . . . with strength and free working qualities similar to seamless steel tubes.

Whether for locomotive, stationary or portable boilers you can anticipate longer tube life . . . less maintenance...by specifying seamless TONCAN IRON. Booklet on request.

THE
BABCOCK & WILCOX
TUBE COMPANY
BEAVER FALLS PENNSYLVANIA

Pig Iron

Four More Furnaces Out This Week—Demand Continues to Subside—Basic Prices Soft

PIG IRON PRICES, PAGE 78

Pittsburgh—Pending business in the pig iron market is slow to close, and in the absence of new inquiry and a continuation of light buying general activity is at a low ebb. Shipments are fairly steady at the same slow rate as noted in recent weeks. Small orders provide little opportunity to test prices. Producers are quoting $17, valley, for No. 2 foundry, malleable, basic and bessemer, with actual prices rather easy. The Shenango Furnace Co. is blowing out its second furnace this week, leaving the Davison Coke & Iron Co.'s furnace the only merchant stack active.

Boston—Sales of pig iron in this district in the past week comprised a few hundred tons. No inquiries are noted.

New York—Pig iron sales total 4000 tons for the week, including an order for 1400 tons for shipment outside the district. Buffalo iron generally is $15 to $16, base, but subject to some deviation. Southern iron is $11, furnace.

Philadelphia—Orders for pig iron are limited mainly to single carloads. Eastern Pennsylvania iron is $17.26, Philadelphia, and southern iron is $16.25, delivered at docks. Basic iron is nominal at $17, delivered, eastern Pennsylvania.

Buffalo—Bethlehem Steel Co. has banked one of its two active stacks at Lackawanna. Sales and inquiries are small and shipments are below expectations.

Youngstown, O.—Pig iron sales continue small. Closing and reopening of adjacent ingot-mold foundries cause an irregular flow of hot metal from furnaces. No. 2 foundry, malleable, basic and bessemer hold at $17, valley furnace, despite sentimental weakening due to sales at lower prices in nearby districts. Not all valley producers of basic have received the Allegheny Steel Co.'s inquiry for a tonnage of that grade for third quarter.

Cleveland—Foundry and malleable pig iron prices are not undergoing a severe test, due to continued low demand, while the position of basic is obscured by lack of interest on the part of consumers. On small lots of foundry and malleable $17, base, Cleveland, for local delivery still is representative, and lake furnaces generally obtain $16 to $17, base, in competitive territory in Ohio and Indiana and $17 to $17.50 in Michigan. A Buffalo furnace, with a freight rate of $3.05, took 1000 tons of foundry iron at Mansfield, O. The most recent sale of basic iron in this territory was made by a lake furnace to Lima, O., consumer, and valley competition did not materialize, with an adverse freight differential of $1 a ton. Sellers here, however concede basic is easier, and believe inquiries would develop equivalents considerably below $17, valley, the price quoted by valley makers for local delivery. Total sales by furnace interests with headquarters in Cleveland during the week were 6000 tons.

Cincinnati—No inquiry for third-quarter pig iron has developed and the market for spot shipments is dull, less than 2000 tons being sold during the past week. Jackson Iron & Steel Co. will resume operations of its blast furnace this week.

Chicago—About 500 tons of pig iron was unloaded here this week as part of a cargo of both pig iron and steel shipped from Cleveland. The steel is going to an upper lake port. Other steelworks iron is being offered in small amounts and several short sales also are being made. Silicon differentials are being obtained on part of the iron, with the base quotation figuring to $17. This is the first shipment here by boat this season. About 3000 tons of foundry iron is being negotiated, specifications for which cover both northern and southern grades. Moderate forward interest is being shown by some buyers. Two or three carloads of silvery iron is on inquiry. A cargo of low phosphorus iron may be shipped here from the East.

St. Louis—Pig iron producers report specifications so far this month better than expected, and at a rate which if continued will place June shipments ahead of May. The movement last month was considerably better than in April.

Birmingham, Ala.—Surplus stocks of pig iron now are larger than 90 days ago and efforts are being made to adjust supply to demand. The Sloss-Sheffield Steel & Iron Co. has banked one of its city furnaces, leaving one in operation. Gulf States Steel Co. will blow out its Gadsden stack. Prices are unchanged.

Toronto, Ont.—Merchant pig iron orders are down to the low point of the year. No interest is shown in future requirements. Some curtailment in consumption is indicated.

Ferroalloy Shipments Light; Prices Unchanged

Ferroalloy Prices, Page 78

New York — Ferromanganese is unchanged at $85, duty paid, in carload lots, with shipments moving largely against contracts. Domestic spiegeleisen, 19 to 21 per cent, is $30, furnace, and high silicon spiegeleisen, for which there is an increasing demand for experimental purposes, is $35, furnace, in carloads. Foreign spiegeleisen, 26 to 28 per cent, continues nominal. Special ferroalloys are quiet, with no further price changes. Tungsten ore continues dull.

Pittsburgh — Specifications for ferroalloys are fairly steady but shipments are light and approximate the low January volume. Ferromanganese is quiet in the spot market with the price for small lots continuing $89.79 delivered, Pittsburgh. Spiegeleisen is $30, furnace. Ferrotungsten is dull and prices are slightly easier, generally being around $1.05.

Semifinished Steel Demand Drifts Downward

Semifinished Prices, Page 78

Pittsburgh — Semifinished steel shipments and new business continue light with the trend in demand still downward. Sales of billets and sheet bars are small and represent early needs. The market on these two grades continues $29 to $30, with forging billets $35 and $36. Wire rods usually are $35.

Youngstown, O.—Movement of billets and sheet bars from producing to nonintegrated consuming mills still is perfunctory. Intermittent operation of valley sheet mills permits only a corresponding movement of sheet bars. Tapering of strip mill operations also is curtailing demand for billets. Sheet bars continue $29 to $30, Youngstown and Pittsburgh, and billets and slabs $30, Youngstown.

Cleveland—The market is quieter, shipments having fallen off, and no interest appearing in third quarter requirements. Sheet bars are easy at $29 to $30, base, Cleveland and Youngstown, O., and billets and slabs, $30. The leading merchant producer here has reduced operations to five of its 14 open hearths.

Scrap

Further Declines Are Slight—Some Scarcity Develops—Many Prices Are Nominal

Chicago—A general leveling off in the steel scrap market is believed to be following the prolonged declines. The feeling is more general that the declines, which resulted in selling prices said to be under cost of yard preparation, have been definitely checked. Short interests are much less active. Melting steel is nominal at $8.50 to $9, with shipments still being made on material purchased at $10 to $10.25. Lack of car building and repairs by railroads is reflected in actual scarcities of several grades, such as iron car wheels and steel axles. A flurry has resulted in iron car wheels, due to recent active short covering, which stiffened the price 25 cents a ton. Most foundry grades are dragging.

Boston—Prices of steel and iron

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	$8.00 to $9.00
Boston, dealers	4.85 to 5.00
Buffalo, No. 1	9.50 to 10.00
Buffalo, No. 2	8.00 to 8.50
Chicago	8.50 to 9.00
Cinci., deal.	8.25 to 8.75
Cleve., No. 1	9.00 to 10.00
Cleve., No. 2	8.50 to 8.75
Det., No. 1 deal.	7.50 to 8.00
Det., No. 2 deal.	6.00 to 6.50
E. Pa. del. mill	9.00 to 10.00
N. Y. deal. R. R.	5.50 to 6.50
N. Y. deal. No. 2	4.00 to 4.50
N. Y. deal. yd.	5.00
Pitts., No. 1	10.25 to 10.75
St. L. No. 1 sel.	8.25 to 9.00
Federal, Ill.	8.00 to 8.50
Granite City, Ill.	7.25 to 7.75
Valleys, No. 1	10.00 to 10.50

COMPRESSED SHEETS

Buffalo, dealers	8.00 to 8.50
Chicago	7.00 to 7.50
Cleveland	8.50 to 8.75
Detroit, dealers	7.00 to 7.50
E. Pa. new mat.	9.00 to 10.00
Pittsburgh	10.00 to 10.50
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	6.00 to 6.50
Cinci., deal	7.75 to 8.25
Cleveland	7.00 to 7.25
Eastern Pa.	7.50 to 8.00
Pittsburgh	8.00 to 8.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.75 to 5.25
Detroit, dealers	4.00 to 4.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.00 to 5.50
Buffalo	12.50 to 13.00
Chicago (3 ft.)	10.50 to 11.00
Chicago (2 ft.)	11.25 to 11.75
Cinci., deal.	13.00 to 13.50
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft and less)	13.00 to 13.50
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	5.00 to 5.50
Buffalo	7.75 to 8.00
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	12.50 to 13.00
Chicago	10.00 to 10.50
Eastern Pa.	13.00
Pittsburgh	12.50 to 13.00
St. Louis	8.75 to 9.25

ANGLE BARS—STEEL

Chicago	9.75 to 10.25
St. Louis	8.25 to 8.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	14.00 to 14.50
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	15.00
Pittsburgh billet bloom crops	15.00 to 15.50
Pitts. sheet bar crops	14.00 to 14.50

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	9.00 to 9.50

SHOVELING STEEL

Chicago	8.50 to 9.00
Cleveland	6.25 to 6.75
St. Louis	8.00 to 8.50

RAILROAD WROUGHT

Birmingham	8.00 to 8.50
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.75 to 8.25
Buffalo, No. 2	9.50 to 10.00
Chicago, No. 1	8.25 to 8.70
Chicago, No. 2	8.50 to 9.00
Cinci., No. 2	8.25 to 8.75
Eastern Pa.	10.00
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.25 to 10.75
St. Louis, No. 1	5.75 to 6.25
St. Louis, No. 2	8.00 to 8.50

SPECIFICATION PIPE

Boston	5.00 to 5.25
Eastern Pa.	10.00 to 10.50
N. Y., deal	6.00 to 6.50

BUSHELING

Buffalo No. 1	8.00 to 8.50
Chicago, No. 1	7.00 to 7.50
Cinn., No. 1 dl.	6.75 to 7.25
Cinn., No. 2	4.00 to 4.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	5.50 to 6.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	4.50 to 5.50
Boston, dealers	1.00 to 1.25
Buffalo	4.75 to 5.00
Chicago	3.75 to 4.25
Cinn., deal.	4.50 to 5.00
Cleveland	5.25 to 5.50
Detroit	3.00 to 3.50
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.50 to 7.00
St. Louis	3.50 to 4.00
Valleys	6.00 to 6.50

BORINGS AND TURNINGS For Blast Furnace Use

Boston	0.50 to 1.00
Buffalo	6.00 to 6.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	6.75 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	5.00 to 5.50
Boston, chem.	7.00 to 8.00
Boston, deal.	1.00 to 1.25
Buffalo	6.00 to 6.50
Chicago	3.50 to 4.00
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	11.50 to 12.50
N. Y., deal.	2.00 to 3.00
Pittsburgh	6.75 to 7.25
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn, deal.	7.00 to 7.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	6.00 to 6.50
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	8.00 to 8.50
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	5.75 to 6.25

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.50 to 12.00
Eastern Pa.	9.00 to 10.00

ARCH BARS, TRANSOMS

Chicago, net	10.50 to 11.00
St. Louis	8.25 to 8.75

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	8.50 to 9.00
Chi., steelworks	7.50 to 8.00
Cleveland	7.00 to 7.50
Eastern Pa.	8.00 to 9.00
Pittsburgh	8.75 to 9.25
St. Louis	7.00 to 7.50

STEEL CAR AXLES

Birmingham	12.00 to 12.50
Boston, ship. pt.	11.00 to 12.00
Buffalo	15.50 to 16.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	12.50 to 13.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	9.55 to 10.10
N. Y., deal.	12.00 to 13.00
St. Louis	9.50 to 10.00
E. Penna.	18.00

CAR WHEELS

Birming., iron	8.00 to 9.00
Boston, iron	14.00 to 14.50
Buffalo, iron	11.00 to 11.50
Buffalo, steel	12.00 to 12.50
Chicago, iron	10.50 to 11.00
Chi. rolled steel	11.00 to 11.50
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	12.00
E. Pa. iron	12.50 to 13.00
Pitts., iron	11.50 to 12.00
Pitts., steel	12.50 to 13.00
St. Louis, iron	7.75 to 8.25
St. Louis, steel	10.00 to 10.50

NO. 1 CAST SCRAP

Birmingham	9.00 to 9.50
Buffalo (mach.)	9.75 to 10.25
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	11.00 to 11.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	7.75 to 8.00
N. Y., del. local foundries	12.00
Pitts., cupola	11.00 to 11.50
San Fran., del.	13.50 to 14.00
Seattle	7.50 to 8.00
St. L. No. 1 ma.	9.00 to 9.50
St. L. No. 1	7.75 to 8.25

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	6.50 to 7.00
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 11.00
N. Y. No. 1 dl.	7.00 to 7.50
N. Y. break. dl.	6.50 to 7.50
Pittsburgh	8.50 to 9.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.50 to 11.00
Chicago, agri.	9.00 to 9.50
Chicago, R. R.	9.50 to 10.00
Cinn., R. R. dl.	11.00 to 11.50
Cinn., agri., dl.	11.00 to 11.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	10.50 to 11.00
St. Louis, rail	8.00 to 8.50

RAILS FOR ROLLING 5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	11.00 to 11.50
Eastern Pa.	11.50 to 12.00
New York	7.75 to 8.25
St. Louis	10.25 to 10.75

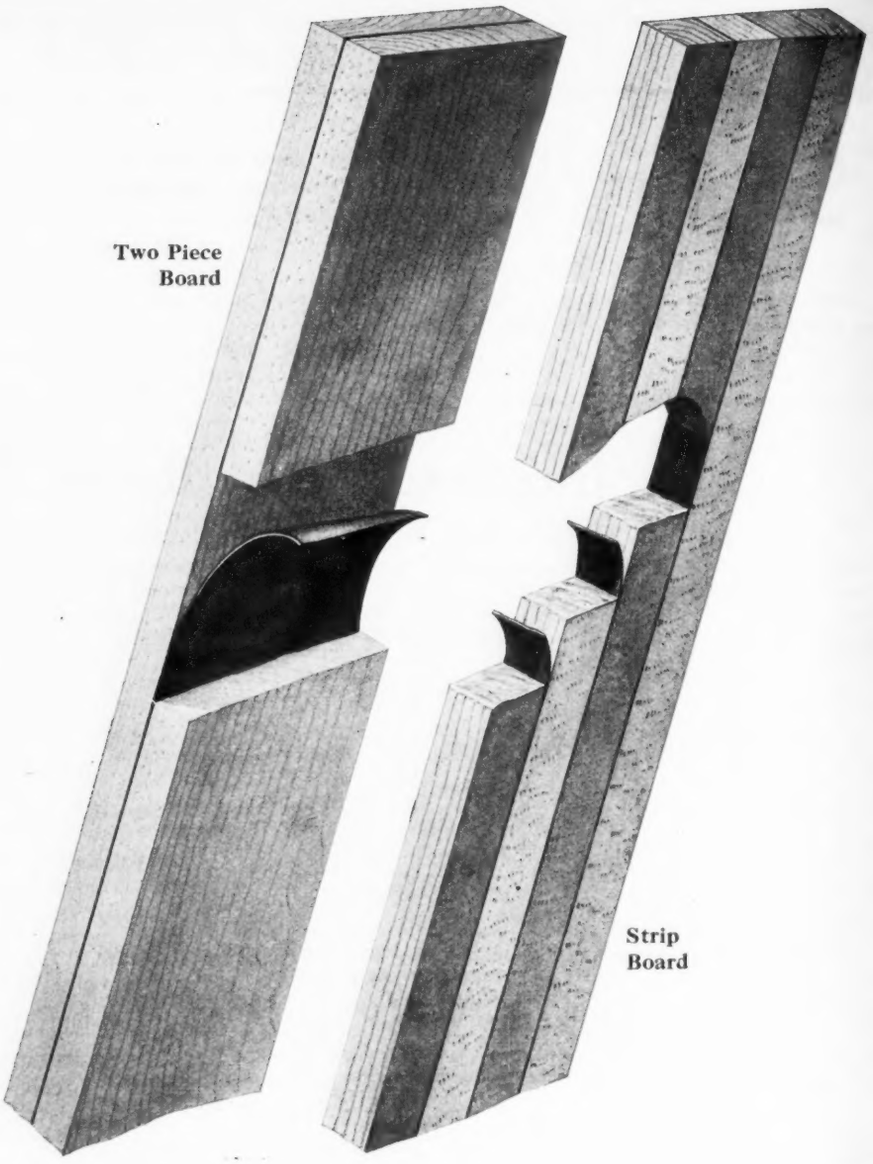
LOCOMOTIVE TIRES

Chicago, cut	11.50 to 12.00
St. L., No. 1	10.50 to 11.00

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	13.50 to 14.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	14.50 to 15.00

Detroit "Safety" Drop-Hammer Boards



THE Two Piece Board consists of two pieces of straight grained Hard Maple with a leather insert between. The Strip Board consists of four, five or six strips of Hard Maple, glued together with a leather insert between. The leather insert acts as a cushion against the compression of the rolls, breaks up vibration and holds the strips firmly together in case of breakage, preventing flying pieces of board from being thrown out of the hammer head. Warping is entirely eliminated.

It is difficult to choose between the Two Piece Board and the Strip Board, but the preference seems to be for the Strip Board. Prices on both boards are the same. We suggest the testing of both types of boards in each hammer in your plant and the standardization afterwards upon the board giving the best service.

For over twenty-five years, we have been building DETROIT SAFETY HAMMER BOARDS and supplying them to most of the large forge plants in this country and abroad.

This is our only product and the high reputation we bear is the result of this specialization.

Especially selected air dried Michigan Hard Maple is used in the construction of DETROIT boards.

We can also supply hammer pins and hammer helves built to your specifications.

The Detroit Drop-Hammer Board Co.

3824 Grand River Avenue, Detroit, Mich.

scrap show little change, but in many grades are too low to allow movement at a profit. Trading is at a low mark.

New York—Dullness continues in steel and iron scrap. Dealers' buying prices, although weak, are steadier than several weeks ago. Cast iron car wheels are off 50 cents. No. 1 machinery cast is slightly firmer, dealers having paid $7.75 to $8. Bethlehem Steel Co. is reported to have paid $3 for several thousand tons from the Belmont hotel wrecking job. Shipments to at least one mill in eastern Pennsylvania are held up. It now appears that one barge order for the Buffalo district, No. 1 and 2 steel, included 25,000 tons, is mostly shipped.

Buffalo—Between 4000 and 5000 tons of blast furnace scrap has been purchased at $6 to $6.50. Dealers are ignoring offers to purchase No. 2 heavy melting steel at $8 and No. 1 at $9.50. Prices are nominally stronger, dealers report.

Philadelphia—Further reductions have been made in steel and iron scrap quotations on recent sales. A Florence, N. J., consumer has bought several hundred tons of heavy breakable cast at $9.50, delivered. Bethlehem Steel Co. has placed a further substantial tonnage of No. 1 steel for Sparrows Point, Md., at $8.50, delivered, and a few scattered lots for delivery to Bethlehem, Pa., at $8. There is not sufficient of the latter to affect the market. A. M. Wood & Co., Philadelphia, is high bidder on several hundred tons of steel scrap at the Philadelphia navy yard at $3.61 per ton. Nassau Smelting & Refining Co. is low on nonferrous metals in the same sale. The bids have not been definitely accepted.

Cast wheels are being offered freely at $12, delivered consumer's plant, against recent prices of $12.50 to $13.

Pittsburgh—Prices of steel and iron scrap continue easy, but the market is slightly more active. Heavy melting steel on the list of the Pennsylvania railroad sold for slightly above $10, but a local mill bought a tonnage at a prices understood to be around $10.75, which is 25 cents below the recent nominal market. Compressed sheets also are lower on light sales, while several other grades have been reduced in the face of quiet demand.

Cleveland—The American Steel & Wire Co. has purchased a moderate tonnage of strictly No. 1 heavy melting steel and compressed sheet scrap, paying between $10.25 and $10.75 for the former and around $10 for the latter. Deliveries are to begin immediately. A local independent mill has held up shipments of steel scrap which it has been taking on a storage basis but continues to receive blast furnace borings and turnings. Shipments to Youngstown and Warren consumers are being held up this week. Some material continues to move to Lowellville. Foundry activity shows further recession and orders for scrap are restricted to an occasional carlot. Specialty grades are weak and quoted lower, as are a number of other grades.

Cincinnati—Iron and steel scrap prices are unchanged but reflect weakness in tapering demand from some consumers. Four railroad scrap lists are current.

Detroit—In the absence of actual buying of steel and iron scrap the market is dull, with the trend toward weakness. Prices have declined slightly in the past week.

St. Louis—Steel and iron scrap has undergone little change and most business is in carloads for immediate use, with future buying practically absent. Prices are unchanged, though nominal in some cases, in abscence of trading. Country scrap is not being shipped as prices are not attractive.

Birmingham, Ala.—Small tonnage of steel and iron scrap is moving, single carloads being the rule. Heavy melting steel is being sold at a maximum of $9.

Toronto, Ont.—Demand for iron and steel scrap is almost absent. Iron grades are spotty with chief interest in machinery cast, for which there is steady demand. Stove plate and malleable grades are dull. With resale demand slowing down steadily dealers are not picking up additional supplies except in special grades for direct shipment to consumers. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axle	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

By-Product Foundry Grade Reduced 50 Cents at St. Louis—Beehive Easy—Market Sluggish

COKE PRICES, PAGE 78

Pittsburgh—Beehive coke demand is fairly steady, but light. The market for furnace grades is dull, with $2.40, the spot price, tested only on small lots. Foundry coke shipments show little change from last month, and prices also are steady.

Boston—Producers have opened books for the last half but consumers show little interest. The spot market also is quiet.

New York—Trading in coke remains sluggish, with beehive furnace coke $2 to $2.25, Connellsville, Pa., and the ordinary brands of beehive foundry coke generally $3.25, Connellsville. By-product coke is unchanged at the newly established levels of $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Specifications for by-product foundry coke so far this month reflect seasonal dullness. The price remains $9, delivered Cincinnati.

Birmingham, Ala.—Coke production continues at about 60 per cent of capacity. New orders are light. By-product foundry coke is steady at $5, base, Birmingham.

St. Louis—By-product foundry coke has been reduced 50 cents a ton to $8.50, delivered in this district. May shipments were slightly below those of April. Current demand is at a new low point.

Rate on Bars Sustained

Washington—Interstate commerce commission has found that the proposed rate on iron and steel bars, in carloads, from Terre Haute, Ind., to Chicago is justified. The order of suspension has been vacated and the proceeding discontinued.

Pacific Coast

Slack Conditions Prevail in All Markets—Warehouse Price Cutting Fails to Increase Sales—Some Pipe and Shapes Are Let But Small Lots Rule—Prices Are Generally Weak

San Francisco—(*By Air Mail*)—Movement of steel products on the Pacific Coast has shown no improvement the past week and new inquiries are slow. Awards included 1434 tons of cast iron pipe for Los Angeles and 800 tons of shapes for the new postoffice in Oakland, Calif. The latter project was placed with Judson-Pacific Co.

Bars, Plates and Shapes

Unstated companies took 245 tons of reinforced steel for a bridge over the Virgin river in Nevada, 200 tons for an apartment on San Marino avenue, Los Angeles, and 150 tons for a state building at Techachapi, Calif. Bids will be opened June 24 for 260 tons for widening a bridge over the Santa Ana river in Riverside county, Calif. Prices in the San Francisco district on out-of-stock reinforced material hold at 2.60c, base, on carload lots. Los Angeles district quotations are firm at 2.50c.

Little plate business developed. Awards were confined to lots of less than 100 tons. So far this year 104,612 tons have been placed, compared with 23,880 tons for the same period a year ago. Prices are weak at 2.00c, c.i.f.

An unknown company secured 500 tons for an apartment on San Marino avenue, Los Angeles. McClintic-Marshall Corp. booked 270 tons for an apartment on Ellis street, San Francisco. Bids have been opened on 398 tons of sheet piling and 223 tons of structural shapes for two bridges in Arizona for the United States bureau of public roads. Bids are being taken on 200 tons for a high school in San Francisco, which has rescinded award for the general contract on the Islais Creek bridge, involving 1100 tons, and will call for new bids shortly.

Activity in cast iron pipe is more pronounced, although the total tonnage booked so far this year is considerably below last year. Los Angeles has placed 637 tons of 12-inch centrifugal pipe with the American Cast Iron Pipe Co.; 478 tons with the United States Pipe & Foundry Co., and 319 tons with the National Cast Iron Pipe Co. Calistoga, Calif., awarded 199 tons to C. G. Claussen & Co. Long Beach will open bids June 19 for 105 tons of 2-inch pipe and Los Angeles will open bids June 11 for 483 tons of 2-inch pipe. Steel pipe remains inactive, most sales being confined to less than carload lots.

Demand for sheets has shown no improvement. Sales and inquiries are for small lots. Prices on blue annealed, No. 10 gage, hold at 2.50c, c.i.f. Black sheets, No. 24 gage are quoted at 3.00c, c.i.f. and No. 24 gage galvanized sheets are priced at 3.50c, c. i. f.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Seattle in Dull State

Seattle—Iron and steel markets of the Pacific Northwest show no improvements. Conditions are unusually dull. Prices remain low. Open warfare among wholesale houses continues, but business has not been stimulated thereby. Public works contracts are furnishing most activity.

Pig Iron and Coke

Foundry operations continue at low ebb, many plants melting only once or twice a week. Buying of pig iron and coke is consequently in small lots. Prices are unchanged. Plants are buying coke mostly in carlots.

Bars, Plates and Shapes

While mill prices are unchanged with plates at 2.00c, shapes at 2.05c and bars at 2.15c, there has not been sufficient inquiry in recent weeks to test these levels.

Local rolling mills are booking little new work, although some business in small tonnages continues. Awards this week included 390 tons of concrete bars. Demand for plates is small and no new projects of importance are up for figures. Vancouver, B. C., opened bids for 500 tons of 24 to 30-inch steel water pipe.

Dominion Bridge Co. Ltd., Vancouver, B. C., has the contract at $162,394 for the 300-foot steel span of the Second Narrows bridge, Vancouver, involving 700 tons. The job is to be completed in 125 days, Western Bridge Co. Ltd., and British Columbia Bridge & Dredging Co., Vancouver, also submitted tenders. Contract to construct a double leaf bascule bridge for an arm of Coos bay, Marshfield, Oreg., went to the Pacific Iron Works, Portland. The tonnage is unstated.

Finished Materials

The wholesale jobbing business is far below normal, price cutting and instability having failed to improve demand. At Portland, jobbers have tried to maintain their prices but without success and the situation in that territory is also reported disappointing.

Pipe Inquiry Is Light

Inquiry for cast iron pipe is slack, municipal requirements having been generally supplied in recent months. Industrial buying is being delayed but should result in some business. Awards this week included 100 tons to the American Cast Iron Pipe Co., Birmingham, Ala., for local improvement jobs. Business pending is of small proportions, 100 tons for the government Indian school, 75 tons for the government plant at La Push and 28 tons at Selah, Wash. Everett, Wash., plans an extension requiring 2000 feet of 12-inch pipe. Victoria, B. C., has received tenders for furnishing a quantity of pipe, hydrants, etc. Sivalwell district, near Everett, is in the market for nearly 13,000 feet of 2 to 5-inch screw pipe.

Old Materials

Receipts of steel scrap exceed requirements and the maximum price is $7.50, gross. Cast scrap is in poor demand as dealers have large stocks, which move slowly.

Cincinnati Tool Builders Entertain Chicago Club

Cincinnati—The Cincinnati Milling Machine Co. and Cincinnati Grinders Inc., were hosts to 250 members of the Chicago Superintendents' and Foremen's Club here June 6. The program under personal supervision of F. A. Geier, president of the milling machine company, included inspection of the plants with demonstration of most modern designs.

Mr. Geier, speaking at a luncheon in the company restaurant, said 30 per cent of the stock in both firms is owned by employes.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized. Direct mill shipments, base minus 5 and 2½.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 45.00 to 47.00
Six to 24-inch, Chicago..... 42.00 to 44.00
Six-inch and over, N. Y..... 34.50 to 36.50
Four-inch, New York ..... 39.50 to 40.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†	3.40c
Pitts.**	3.30c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.95c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.40c
Chicago (local del.)	4.35c
Chicago (outside)	4.35-4.60c
Cincinnati	4.40c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†	3.85c
Pitts.**	3.90c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.40c
St. Paul	4.23c
Tulsa	4.60c-4.75c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.35c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

TYSON CAGELESS TAPERED ROLLER . . . BEARINGS

Cooler AT HIGHER SPEEDS BECAUSE THEY ARE CAGELESS

Two years of continuous tests have proved that the cageless principle of Tyson Tapered Roller Bearings is sound in practice as well as in theory.

Because the cage is eliminated, sources of heat-breeding friction are reduced to the vanishing point. Tyson bearings can operate—and do operate—for hundreds of hours on end under full load at tremendous speeds, maintaining satisfactory low temperatures.

The double-ribbed backplate, which gives each roller a double bearing—one on each side of its axis of rotation—is inherent alignment for each roller—and allows elimination of the cage and its heating friction. The rollers run free as the wind, carrying their load on the "taper." Their contact with the end plate is extremely light—just enough for alignment.

Tyson Cageless bearings are virtually friction free with resulting maximum resistance to wear at all required speeds.

30 to 50 per cent more rollers, occupying the space gained by discarding the cage, means proportionately more load capacity. True inherent alignment means enduring precision.

Size for size, Tyson bearings are interchangeable with all ball and roller types.

TYSON TRADE CAGELESS MARK

TYSON ROLLER BEARING CORPORATION

MASSILLON · OHIO

Brown-Marx Bldg., Birmingham, Alabama
7310 Woodward Ave., Detroit, Michigan
Oliver Building, Pittsburgh, Penn.
1900-Euclid Building, Cleveland, Ohio
Flatiron Building, New York City
602 West Randolph St., Chicago, Ill.

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass ..product prices based on 8.25c, Conn., for copper

Sheets	
Yellow brass (high)	15.62½
Copper, hot rolled	18.12½
Lead, full sheets (cut ½c more)	7.75
Zinc sheet (100-lb. base)	8.75
Tubes and Pipes	
Seamless yellow brass (high)	20.50
Seamless copper	20.62½
Rods	
Yellow brass (high, full turnings)	13.87½
Naval brass	14.87½
Anodes	
Copper, untrimmed	15.62½
Wire	
Yellow brass (high)	16.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass		
New York	4.75 to	5.00
Chicago	4.50 to	4.75
Cleveland	4.50 to	5.00
St. Louis		4.75
Heavy Yellow Brass		
New York	3.00 to	3.25
Heavy Copper and Wire		
New York	6.00 to	6.25
Boston	5.50 to	5.75
Chicago	4.50 to	5.00
Cleveland	4.50 to	5.00
St. Louis	5.25 to	5.50
Red Brass Borings		
New York	4.50 to	4.75
Yellow Brass Tubing		
Cleveland	2.75 to	3.25
Light Copper		
New York	5.00 to	5.25
Chicago	4.50 to	4.75
Cleveland	4.00 to	4.50
St. Louis		4.75
Light Brass		
Boston	2.25 to	2.50
Chicago	2.50 to	2.75
Cleveland	1.75 to	2.25
St. Louis	2.50 to	2.75
Zinc		
New York	1.00 to	1.25
Cleveland		1.00
St. Louis		1.00
Aluminum		
Clippings, soft, Cleveland	12.00 to	12.50
Clippings, hard, Cleveland	8.50 to	9.00
Borings, Cleveland	4.50 to	5.00
Mixed cast, Cleveland	4.50 to	5.50
Mixed cast, Boston	4.00 to	4.25
Mixed cast, St. Louis		4.00

Secondary Metals

Remelt aluminum No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	8.12½

Metals

Sentiment Improves When Most Prices Show Small Change—Copper Recovers from 8.00c

New York—Sentiment in the metal market has improved this week. Actual sales prices of most metals have shown practically no change with the exception of copper.

Under the influence of the stock market, the latter metal firmed up to 8.25c after having dropped to 8.00c, the lowest price in history. Brass and copper mill products have been cut to the basis of 8.25c, the cuts being ⅛ to ¼-cent, after a similar drop about a week ago. Brass ingot prices were lowered ¼-cent several days ago.

Copper—Fair domestic buying was done in copper at 8.25c and 8.00c. After the lower level was reached, the stock market turned stronger with the result that much additional copper was wanted at 8.00c but sellers became reluctant at that price. About the time that the domestic market firmed up to 8.25c, the export price was cut to this equivalent, or 8.52½c, c.i.f., with a result that large export buying was done. Subsequently, both branches of the market again quieted down.

Zinc—Little selling pressure, accompanied by practically no consumer interest, caused the market to shade from 3.25c a week ago to 3.20c. In the past day or two it has appeared that very little metal remained available at the lower price. The ore market has been firm at $21 a ton, so that the spread is extremely narrow. May statistics showed practically no change in stocks of about 143,000 tons. Both shipments and output were cut to a little less than 26,000 tons each, or the lowest level since early 1922. Stocks have been almost unchanged for seven months.

Tin—Low prices at times have attracted buying, but in the past few days the market has been dull. On account of the lowness of prices, there is not much selling pressure.

Aluminum—New business is light. Prices continue unchanged.

Lead—A little improvement probably has taken place in the paint consumption of lead, but most other branches of the industry are quiet. Prices are unchanged.

Coke By-Products Easy; Benzol Down Cent a Gallon

New York—Benzol has declined 1.00c a gallon in tank shipments, the usual price now being 18.00c. This reflects weakness in the motor fuel market. Toluol continues active at unchanged prices. Solvent naphtha and xylol are unchanged in price and volume. Production of distillates still is light and stocks are not accumulating. Domestic buying covers the bulk of the movement in sulphate of ammonia. Prices are easy. Phenol and naphthalene are steady, spot buying of the latter holding well.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

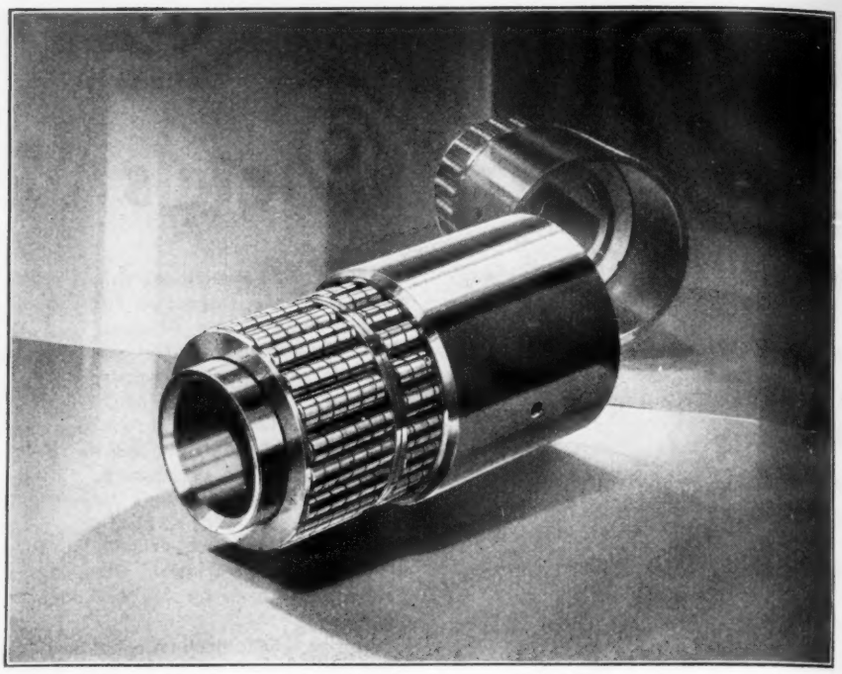
	Spot
Pure benzol	$0.18 to 0.19
90 per cent benzol	0.18 to 0.19
Toluol	0.27 to 0.29
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.675 to $1.775

Quicksilver Slightly Lower

New York—Quicksilver is quiet, at about $100 to $101 a flask for small spot lots. These prices are a shade lower than recently, following a cut in the European market to the equivalent of this level.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
June 3	8.00	8.50	8.00	22.42½	22.80	3.75	3.60	3.22½	22.90	6.30	35.00
June 4	8.12½	8.37½	8.00	22.37½	22.70	3.75	3.60	3.20	22.90	6.30	35.00
June 5	8.25	8.37½	8.00	22.50	22.87	3.75	3.60	3.20	22.90	6.30	35.00
June 6	8.25	8.37½	8.00	22.40	22.80	3.75	3.60	3.20	22.90	6.30	35.00
June 8	8.25	8.37½	8.00	22.30	22.60	3.75	3.60	3.20	22.90	6.25	35.00
June 9	8.25	8.37½	8.00	22.50	22.80	3.75	3.60	3.25	22.90	6.25	35.00



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When ordering new equipment or modernizing the old you can get the most satisfaction by specifying the best. It pays to be sure in the beginning. Hyatt Roller Bearing Co., Newark, Detroit, Chicago, Oakland, Pittsburgh.

HYATT
ROLLER BEARINGS
PRODUCT OF GENERAL MOTORS

Europe

Prices Continue Downward—Continent Undercuts Britain—German Operations, 40 Per Cent

London—(*By Cable*) — No improvement is noted anywhere in the European iron and steel markets. Prices continue falling in France and Belgium. German steelworks are operating at 40 per cent. Many of the German companies refuse export orders at the prices that are offered. Russia has purchased a considerable amount of boiler plates in Germany.

British exports are shrinking. As an indication of the competition British steelworks are facing, Continental billets are obtainable at £4 ($19.44), delivered in Birmingham, and steel bars at £4 12 ($21.87). The Shipbuilding Employers' federation is protesting against high steel prices quoted by British mills, while the latter say present levels are unremunerative. Galvanized sheet and tin plate prices are easier.

Three blast furnaces in the Barrow district have been blown out. Foreign competitors are undercutting British producers' prices at home and abroad.

Japanese Rail Competition Disturbs European Makers

London—International Rail Makers' association is one of the international ententes which has been most successful since its reorganization after the war, and it is notable for the fact that since its re-establishment in October, 1926, this association has managed to maintain the basis price of rails at a stable level, starting at £6 per ton, f.o.b., at the end of 1926 and reaching £6 10s in October, 1928, being unchanged since.

It also is remarkable that although at times there have been differences of opinion between some of the nations represented in the association, these differences of opinion always have been satisfactorily settled, and, in brief, the International Rail Makers' association is the only organization of its kind which can boast of having enjoyed smooth running practically during the whole of its present existence. Some anxiety recently was expressed, however, owing to the fact that Japanese rail mills were threatening seriously to compete against the association in certain foreign markets.

The *Usine*, of Paris, in its supplement of May 9 throws light on the subject. It states that the principal group of Japanese mills at one time approached the directing committee of the I. R. M. A. with the request to become a member of the association. In order to support its request, the Japanese group mentioned its capacity of production and its possibilities of competing against other countries in the Far Eastern markets. It is stated that the directing committee of the I. R. M. A. took a favorable view of the Japanese request, and showed a disposition to accept the proposal on principle provided the Japanese group presented a formal demand for admission.

However, the Japanese group is stated to have demanded such a considerable quota in the combined output of the association that its proposals were rejected. As a result of this action, Japanese rail mills have intensified their competition, particularly in Far Eastern markets, but it is generally recognized that this competition is limited in its scope.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 8	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3**.....	$14.24	2 18 6*	$11.57	2 7 6	$11.57	2 7 6	$12.18	2 10 0
Basic-bessemer.....	14.61	3 0 0†	11.32	2 6 6	11.32	2 6 6	13.39	2 15 0
Hematite, Phos. .02-.05	15.58	3 4 0	.....	.....	.....	.....	17.05	3 10 0
SEMIFINISHED STEEL								
Billets.....	$26.18	5 7 6	$15.34	3 3 0	$15.34	3 3 0	$15.83	3 5 0
Wire rods.....	41.40	8 10 0	24.35	5 0 0	24.35	5 0 0	24.35	5 0 0
FINISHED STEEL								
Standard rails.....	$40.18	8 5 0	$31.66	6 10 0	$31.66	6 10 0	$31.66	6 10 0
Merchant bars.....	1.63c	7 10 0	.75c	3 8 0	.75c	3 8 0	.81c	3 14 0
Structural shapes.....	1.68c	7 15 0	.72c	3 5 6	.72c	3 5 6	.74c	3 7 0
Plates.....	1.79c	8 5 0	.91c	4 3 0	.91c	4 3 0	.91c	4 3 0
Sheets, black, 24 gage	1.90c	8 15 0	1.76c	8 0 0	1.76c	8 0 0	1.84c	8 7 6
Sheets, gal., 24 ga. corr.	2.22c	10 5 0	2.20c	10 0 0	2.20c	10 0 0	2.31c	10 10 0
Bands and strips.....	2.06c	9 10 0	.94c	4 5 0	.94c	4 5 0	.94c	4 5 0
Plain wire, base.....	2.06c	9 10 0	1.08c	4 18 6	1.08c	4 18 6	1.10c	5 0 0
Galvanized wire, base..	2.39c	11 0 0	1.38c	6 5 0	1.38c	6 5 0	1.38c	6 5 0
Wire nails, base.....	2.39c	11 0 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Tin plate, box 108 lb...	$ 3.41	0 14 0	.....	.....	.....	.....	$ 8.28	1 14 0

Domestic Prices at Works or Furnace—Last Reported

			French Francs		Belgian Francs		Rentenmarks	
Fdy. No. 3 Pig Iron**	$14.24	2 18 6	$11.96	305(2)	$12.83	460	$18.52	78
Basic pig iron.....	14.61	3 0 0	12.74	325(1)	11.72	420	20.30	85.50
Furnace Coke.....	2.92	0 12 0	5.68	145	5.16	185	5.08	21.40
Billets.....	26.18	5 7 6	19.21	490	17.72	635	26.23	110.50
Standard rails.....	1.79c	8 5 0	1.41c	485	1.57c	1,210	1.37c	127
Merchant bars.....	1.68c	7 15 0	.86c	480	.86c	660	1.38c	128
Shapes.....	1.90c	8 15 0	.99c	550	.85c	655	1.35c	125
Plates.....	1.95c	9 0 0‡	1.26c	700	.99c	765	1.59c	147
Sheets, black, 24 gage	1.90c	8 15 0	2.21c	1,225	1.89c	1,450	1.26c	117
Sheets, gal. 24 ga., corr.	2.28c	10 10 0	2.57c	1,425	2.54c	1,950	3.56c	330
Plain wire.....	2.06c	9 10 0	1.85c	1,025	2.08c	1,600	2.24c	207
Bands and strips.....	2.06c	9 10 0	1.10c	610	1.40c	1,075	1.60c	148

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £16 9s 0d ($79.95) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Mannesmann Earns Less

Berlin—The report of the past financial year of the Mannesmann Tube Co. states that this concern operated at only 40 per cent of capacity during 1930. Net profit for the year was 14,256,000 marks ($3,400,000), compared with 16,073,000 marks ($3,825,000) in 1929. The dividend was 6 per cent, as against 7 per cent in the preceding year. The decrease in the value of sales of tubes was 18 per cent and it was stated that during the first months of 1931 the position was becoming worse.

Poldi Dividend Is Cut

Prague—Poldi Steelworks during 1930 made a gross profit of 33,630,000 crowns ($995,000), against 46,000,000 crowns ($1,360,000) in 1929. There was a decrease of 20 per cent in the volume of sales, coupled with a decrease in selling prices. The dividend was reduced from 9 to 7 per cent.

Machinery

WHAT generally is called the "usual summer slump" is in evidence in every industrial center—at least as far as machine tool business is concerned. Superimposed upon an already stagnant market, this condition is resulting in some new low levels which seem destined to persist until fall. A number of machine tool companies which were able to take on men earlier in the spring, again have been forced to lay them off and to revert to short time. In anticipation of unfavorable statements covering second quarter operations, dividends have been cut or passed and listed machine tool stocks reflect the situation.

New York—Machine tool buying and inquiry both are light. The few sales reported usually are for individual units. Pending volume has dropped to a low point and most dealers and builders do not expect any general improvement during the next two months. About 18 tools recently have been purchased for a school at Bloomfield, N. J., and the bulk of active inquiry now is for government plants and yards, and for muncipal shops.

Ball bearing plants in Connecticut have slipped back slightly, due to some slowing up by automobile plants, although several bearing producers are still operating close to 40 hours a week. Considerable Russian business remains to be placed. One plant making grinders in New England is operating full time as a result of having booked some good foreign orders. New England industries in general appear to be somewhat ahead of other sections in the East. Textile machinery builders are reported to have booked some fair business recently, both for mills in that section and in the South. Ingersoll-Rand Co. has booked compressors and rock drilling equipment for the Hoover dam construction work.

Worcester, Mass.—The first week of June fails to show any change from the low level of activity which the machine tool market generally reached in May. Manufacturers with foreign orders are continuing production on those orders but domestic demand and inquiry throughout the market has come almost nonexistent. This is true also in the case of small tools.

Norton Co., Heald Machine Co. and Arter Grinding Machine Co., manufacturers of grinding machines, and Sleeper & Hartley Inc., maker of wire machinery, all are engaged on orders from Soviet Russia.

Pittsburgh—Despite the lack of definite improvement in machine tool buying, sellers look for improvement in business over the next 30 days. Inquiry has been slightly more active recently, a larger number of users entering the market for single tools. A lack of large lists in new business continues but a fair volume of equipment still is pending. Orders also usually involve only single tools.

No additional equipment buying by Westinghouse Electric & Mfg. Co. is expected as a result of the formal placing of the order by the Pennsylvania railroad for electric locomotives. Railroads continue to stay out of the equipment market and steel companies also are buying sparingly.

Cleveland—In the rather general gloom which has descended upon this territory during the past month, activity among builders of power shovels and other heavy construction machinery stands out in bold relief. This is true particularly in the neighboring city of Marion, O., where such activity primarily is due to orders for equipment to be shipped to Russia and also for equipment to be used in construction of the Hoover dam. Several companies in Cleveland likewise are affected favorably.

Dealers and builders alike report machine tool orders more scarce, with no good prospects immediately in sight.

Chicago—Aside from several railroad orders, machine total purchases have been negligible, Santa Fe bought two 32-inch shapers, and Burlington closed on a hacksaw and several other items. Great Northern railroad will buy about $25,000 worth of equipment at St. Paul, while Chicago, Milwaukee, St. Paul & Pacific railroad has added a grinder to its list which was released about a month ago.

Most dealers expect little or no revival this month or even during July and August, but all express hopes of improved inquiriy in September. Scattered inquiries from industrial buyers include requests for bids on lathes and presses. It is understood the Illinois Steel Co. list has been postponed, and another week may elapse before the Austin High school lathes are purchased. Fears are expressed that the municipal tax crisis here may delay the expected $500,000 inquiry from Lane Technical High school.

Mirrors of Motordom

(*Concluded from Page* 25)

has lowered its daily rate from nearly 450 units to about 400. Dodge continues to assemble about 500 cars daily, but last week operated only two days, compared with 5½ the week preceding.

DeSoto also is more irregular, now operating only a 4-day week but assembling close to 200 units daily, the net result being a recession from 1200 to about 800 units weekly. Plymouth is the bright spot of the entire Chrysler division, the new model being largely responsible, the schedule now being 400 daily, 4 days a week, a net gain of about 400 in weekly output.

Hupp, which holds steady at about 100 units daily, 5 days a week, has begun operations at its Windsor, Ont., plant. Hupp's May production was 2154 units, against 5139 in April and 3348 in May, 1930.

Oldsmobile, which continues to hold back its eight, is unchanged at 325 to 350 units a day, 4 days weekly. Hudson-Essex, still under the impetus of its free-wheeling introduction, is also holding its own at about 500 units daily, 4 days a week.

Oakland-Pontiac has eased off moderately, to 525 cars daily, 5 days a week, of which about 400 are Pontiacs and 125 Oaklands. May output of Oakland-Pontiac was 14,829, compared with 11,972 last May. Reo is a shade stronger at 100 cars daily, 5 days. Willys-Overland has eased off slightly to just under 600 units daily, 5 days.

Graham, with a tentative schedule of 3000 units for June, has retrenched moderately to 150 units, 5 days, Buick is off slightly to 500 units daily, 4 days a week. DeVaux-Hall production continues just under 1000 units weekly.

It is now believed that Packard will not feature any radical body change in its new line. One departure, it is understood, will be a V-shaped band down the middle of the radiator.

The report persists that Lincoln, which continues to make about 115 units weekly, will revise its price downward. Cadillac-LaSalle continues on a 4-day week but has dropped its daily rate from 110 to 90. Pierce-Arrow, which is considering a Canadian plant as a result of the increased tariff, is assembling 100 cars a week.

(Mirrors of Motordom will appear again next week.)

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

WATERBURY, CONN.—Lux Clock Mfg. Co., 97 Sperry street, will build an addition to its plant for the manufacture of electric clocks. T. Freney, 51 Leavenworth street, is architect. Estimated cost, $45,000.

BOSTON—United Car Fastener Co., 31 Ames street, Cambridge, is inquiring for Horton type clutches of small sizes, ¼ to one horsepower.

BOSTON—Warren Foundry & Pipe Co., 91 Federal street, has let contract for a 1-story foundry, to cost approximately $40,000.

BOSTON — Eastern Massachusetts Railway Co., 38 Chauncy street, will build two garage and shop buildings on Franklin street in Melrose, according to private plans. Cost is estimated at $100,000.

NEW BEDFORD, MASS.—Holmes Coal Co. Inc., Pine street, is having private plans prepared for a coal handling plant, hoisting tower and power house. Approximate cost, $45,000.

New York

BROOKLYN—Bilt-Rite Metal Products has been incorporated with $10,000 capital by M. P. Parmet, 307 Ralph avenue.

KINGSTON—Ideal Auto Parts & Machine Shop has been incorporated with 200 common shares by H. W. Gamso, 253 Broadway, New York.

NEW YORK—Preferred Foundry & Machine Corp. has been incorporated with $10,000 capital by F. I. Slater, 265 East 201st street.

NEW YORK—Lenz Process Corp. has been incorporated with $25,000 and 100 common shares by F. M. Wolf, 292 Madison avenue, to make printing machinery.

NEW YORK—H. C. Young, 37 Murray street, will let contract for construction of a new building to be used as a workshop and for light manufacturing. J. Fisher, 45 Astor place, is architect. Estimated cost, $40,000.

NEW YORK—Board of education, 500 Park avenue, is having preliminary plans made for a vocational school to be built at Wall and Belmont streets and St. Mark's place in St. George, Richmond borough. Cost will approximate $1,000,000.

New Jersey

LONG BRANCH—Atlantic Plumbing Supply Co., Long Branch avenue, has awarded contract for erection of a shop unit. Cost will approximate $45,000.

NEWARK—Fulton Brass Foundry Inc. has been incorporated with $50,000 capital by M. H. & C. E. Cohn, 60 Park place.

NEWARK—Cooper Alloy Foundry Co. has been incorporated with $125,000 capital by Berlin & Berlin, 207 Market street, to deal in iron and steel.

Pennsylvania

CAMPHILL—L. B. Smith Inc., with plant at White Hill, Pa., and office here, advises through C. G. Hewitt that the company is interested in purchasing portable air compressors, diesel engines, shovels, cranes, tractors and road rollers for resale. (Noted June 4).

HARRISBURG—Vend-U Products Co. has been incorporated with 250 no par shares by Jane Shope, 2834 Walnut street, Penbrook, Pa., and Edgar P. Hutchins, 2408 Reel street, Harrisburg, to manufacture and deal in vending machines and vending machine parts.

PHILADELPHIA — Safety Gas Lighter Corp. has been incorporated with $25,000 capital by Alexander Weiss, 2014 North Fifty-sixth street, to manufacture, assemble and deal in safety gas lighter appliances.

PHILADELPHIA—Keystone Metal Stamping Works Inc., whose incorporation by George A. Dether, 550 North Fifth street, recently was noted, has leased a 1-story plant at Mascher and Berks streets, for offices and manufacturing. (Noted May 7.)

PHILADELPHIA—George P. Pilling & Sons Co., Twenty-third and Arch streets, has closed bids for plant alterations. Ballinger Co., Twelfth and Chestnut streets, is architect. Company manufactures surgical instruments.

PHILIPSBURG—General Hardware & Supply Co. Inc. has been incorporated with $100,000 capital by A. B. Curtis, Philipsburg, and J. W. Grant, Patton, Pa., to manufacture, sell and distribute hardware, mill and mine supplies. Henry Flood Jr., 369 Lexington avenue, New York, is interested.

PITTSBURGH—Builders' Products Co. has been incorporated with $10,000 capital by Harvey C. Wertz, R.F.D. No. 4, Geneva Hall, Beaver Falls, Pa., to manufacture, fabricate and deal in metal and metal products. Howard M. Nichols, Ingram, Pa. and Robert Jones, Bellevue, Pa., are interested.

WILLIAMSPORT—J. H. McCormick & Co. has been incorporated with 10,000 no par shares, by John H. McCormick, 652 Oliver street, to manufacture and deal in metal, metal products, tools, machinery, blowers, compressors, fans and pumps.

Ohio

CINCINNATI—Heinss Spading Machine Co. has been incorporated with $100,000 capital by W. J. Schultz, 419 First National Bank building.

CLEVELAND—Lake Auto Radiator Mfg. Co. has taken lease to 6000 square feet of floor space at 5005 Euclid avenue for the manufacture of auto radiators.

CLEVELAND—McKinney Tool & Mfg. Co., A. McKinney vice president, 1688 Arabella road, proposes erection of a plant addition, 50 x 150 feet. Preliminary plans, to be private, are being prepared. Cost is estimated at $50,000.

COLUMBUS—Tarrier Steel Co. is erecting a crane runway at its plant on Hanford street. Company fabricates structural steel, ornamental iron, bronze and aluminum.

DAYTON—Wehner Roofing Co., 833 South Ludlow street, advises through L. G. Hines, assistant secretary, that present needs for machinery have been filled, including sheet metal and spot welding equipment. Future needs may be for presses. (Noted May 28.)

DAYTON—F. B. Lees, constructing quartermaster, Wright field, will open bids June 25 for air corps buildings to include maintenance structure, radio beacon builidng and dynamometer storage building. Cost is estimated at $225,000.

Indiana

GARRETT—City will receive bids June 15 for construction of a power plant addition, 22 x 74 feet, for which equipment will be needed. A. M. Strauss, 415 Cal-Wayne building, is architect. Estimated cost, $42,000.

HAMMOND—Joseph Gordon is receiving bids for construction of a 2-story shop building to be erected at Hohman and State streets. Estimated cost, $150,000. Unit will be 60 x 140 feet. Lowenberg & Lowenberg, 111 West Monroe street, Chicago, are architects.

SHEPARDSVILLE — Miami Coal Co. is rebuilding its coal tipple, according to private plans. Equipment will be installed.

Michigan

BAY CITY—City will buy pumping equipment in connection with improvements to sewage treatment facilities. Menefee & Dodge, Ann Arbor, Mich., are engineers. Total cost is estimated at $250,000.

HOUGHTON — Gogebic & Portage Lake Boat & Engine Co., A. B. Hargrave manager, plans to build a 30 x

It's Difficult to Injure

this rugged Alundum "C" Abrasive

DELIBERATE attempts were made to spoil Alundum "C" abrasive by pouring harmful oil over several batches to reduce capillarity. Several tests showed that it required

six times as much oil to reduce the capillarity of Alundum "C" abrasive as it did to reduce the capillarity of glossy abrasive in the same degree.

And capillarity is vitally important. Bonding strength between abrasive and glue is decidedly influenced by the degree of capillarity. The lower the capillarity, the less the strength and the weaker the polishing wheel structure.

Alundum "C" abrasive is made with a high capillarity. Tests show it to have a 26% stronger grip than glossy grain at practically any comparative degree of capillarity. It retains this characteristic even under unfavorable conditions. But it is shipped in exclusive, moisture-proof kegs for protection.

Is your grinding department using NORTON CONTROLLED STRUCTURE WHEELS?

Remember—Correct STRUCTURE is as important as correct grain and grade.

W-362

NORTON COMPANY, WORCESTER, MASS.

New York Chicago Detroit Philadelphia Pittsburgh Hartford
Cleveland Syracuse Hamilton, Ont. London Paris Wesseling, Germany

NORTON POLISHING ABRASIVES

60-foot repair shop and an 80 x 98-foot boat storage building.

Illinois

CHICAGO—Machine shop of the Chicago Great Western railroad, Grand Central station, located at Taylor street, recently was damaged by fire.

CHICAGO—Shop addition will be built by Matchless Metal Polish Co., 840 West Forty-ninth place. Unit will be 41 x 78. Kocher & Larson, 6409 South Halsted street, are architects.

CHICAGO — David Architectural Iron Works Inc., 2019 Walnut street, has been incorporated with $10,000 capital by M. M. Loman, 1357 Estes avenue, to deal in all kinds of iron products.

CHICAGO—Edward Katzinger Co., 1949 North Cicero avenue, has completed plans for construction of a 2-story plant addition. Structure will be 209 x 220 feet and will cost approximately $150,000. A. G. Alschuler, 1900 Steger building, is architect. Contract is held by L. Balkin Co., 1850 Austin avenue. Company manufactures tinware. (Noted March 19).

CHICAGO—Hangar and shop construction involving approximately $500,000 at the municipal airport awaits final enactment by the Illinois state legislature of a bill permitting long-term leases on municipal property by air line operators. United Air Lines, representing National Air Transport Inc., 5936 South Cicero avenue, Boeing Air Transport Co., Pacific Air Transport Co. and Varney Air Lines, is seeking larger quarters. Northwest Airways Inc., 17 East Monroe street, plans to erect its own hangar and shops. Central Air Lines, 5240 West Sixty-third street, and Trans-American Air Lines Corp. also are considering building programs.

MORRISONVILLE—McLean Implement Co., Sixth and Ricks streets, has been incorporated with $10,000 capital by Keller & Dixon, 108 East First street, Dixon, Ill., to engage in a general machine shop and repair business.

Southern States

TUSKEGEE, ALA.—Tuskegee institute, 16 Cooper square, New York, proposes erection of an engineering building here. Cost is estimated at $300,000.

TAMPA, FLA.—Tampa Shipbuilding & Engineering Co., Estuary street, proposes to build a floating drydock, 94 x 313 feet.

ATLANTA, GA.—Southern Wire & Iron Works, 305 Martin street, is reported to be inquiring for shears to cut ½-inch bars.

SHREVEPORT, LA.—Capt. George E. Lamb, constructing quartermaster, Barksdale field, has closed bids for construction of technical buildings to cost $100,000 and will receive bids for five hangar units.

BALTIMORE — Baltimore Tool Works Inc., J. F. Hakes president, 108 Grant street, will move to 1110 Race street, where larger quarters have been acquired. Company manufactures drills, chisels and other tools.

BALTIMORE—Dietrich Brothers, 220 East Pleasant street, will proceed with erection of a fabricating plant addition at Twenty-eighth and Reese streets. Structure will be 200 x 405 feet. Equipment to be installed includes riveting equipment, spacing machine, electric hoist, milling machine, grinder, panatgraph machine and straightener. Company manufactures tools. (Noted Jan. 29).

KNOXVILLE, TENN.—Knoxville college proposes to build a science building to cost $100,000 and a power plant to cost $30,000. Dr. J. Kelly Griffin is president.

Missouri

ST. LOUIS—Firex Corp. has been incorporated with $50,000 capital by John B. Marquis, 6328 Northwood street, to make fire extinguishers and alarms.

Oklahoma

ENID—General Tool Co. has been incorporated with $25,000 capital by H. E. Van Valkenburg and N. H. Christopher.

OKLAHOMA CITY — Oklahoma Aviation Service Inc., municipal airport, will provide repair facilities at a 120 x 140-foot hangar to be erected at a cost of about $35,000. Langbein & Johnston, Hightower building, are architects.

PICHER—Eagle-Picher Mining & Smelting Co., subsidiary of Eagle-Picher Lead Co., A. E. Bendelari president, 1006 Broadway, Cincinnati, plans to build a lead producing plant with capacity of 3600 tons. Estimated cost, $400,000.

TULSA—Braden Steel & Winch Co., R. H. Bartlett president, 1007 East Admiral boulevard, will add to facilities and employ 150 additional workers for the manufacture of a combine harvester.

Texas

HOUSTON—Plant of Sampson Machinery & Supply Co., 23 Chartres street, recently was damaged by fire.

HOUSTON—Kling Supply & Mfg. Corp. has been incorporated with $100,000 capital by Joseph Klingensmith, 2501 Nance street, to manufacture oil field supplies.

LONGVIEW—A. & B. Spring Mfg. Co., 2 Northwest Tenth street, Oklahoma City, Okla., is establishing a field shop here for the repair of automobile and truck springs.

SAN ANTONIO—Central Power & Light Co., Alamo National Bank building, plans to enlarge and install equipment in a series of light and power plants recently acquired in towns near here.

Wisconsin

MONDL—Mondl Mfg. Co., manufacturer of shoe repair machinery, will build a 3-story addition, 44 x 50 feet, with a 1-story wing, 16 x 50 feet, to its plant at 40 Otter street. A. M. Mondl is president.

Minnesota

MINNEAPOLIS — Strutwear Knitting Co., 1015 South Sixth street, will add to its maintenance shop equipment. Items will include drill presses, lathes, planer, saw, forges, tin shop and machine shop tools.

MORRIS—J. A. Mielke, city manager, will open bids June 15 for two 1000-gallons per minute pumps. Approximate cost, $25,000.

North Dakota

WAHPETON—C. Stevens, superintendent United States Indian school, will be in charge of construction of a shop building here. Estimated cost, $25,000.

South Dakota

FLANDREAU—Department of Indian affairs, Washington, plans to build a shop here, to include welding department, at a cost of approximately $35,000.

Iowa

CEDAR FALLS—Iowa State Teachers college plans to build a garage, shops and a power plant here, at a cost of $350,000. B. P. Fleming, Las Cruces, N. Mex., is engineer.

OELWEIN—Chicago Great Western railway, C. G. Delo chief engineer, Grand Central station, Chicago, has started construction of a round house here. Cost is estimated at $100,000. Two motor-driven cranes and other machinery will be installed.

Nebraska

AINSWORTH—M. H. Remmender, operating Remmender airport, plans to build a hangar unit, 60 x 60 feet.

OMAHA—City, J. P. Hoctor clerk, will let contract for a 1-story shop and maintenance building, 66 x 132 feet, for police department. G. L. Fisher, City National Bank building, is architect. Cost is estimated at $35,000.

Pacific Coast

LOS ANGELES—National Flying Service Ltd., recently organized, has option on a site for the construction of a hangar, shop and administration unit.

OAKLAND, CALIF.—Coast Tool & Engineering Works has been established at 1083 Jones street. George

Wollgren is manager. Machine shop work, tool and machinery repairs and metal spinning will be engaged in.

OAKLAND, CALIF.—Aircraft Co. of Los Angeles, Los Angeles, is reported to be negotiating with city officials here for the establishment of a plant for the manufacture of light planes.

WHITTIER, CALIF.—City will purchase equipment, to include two horizontal centrifugal pumps with motors, air blowers and other items. Cost is estimated at $25,000.

SEATTLE—Vacuum Smelting Co. has been incorporated with $10,000 capital by Ralph F. Stratton, 1173 Dexter Horton building.

SEATTLE — Belmaco Metal Craft Corp. has been incorporated with $50,000 capital by Bogle, Bogle & Gates, Central building, to manufacture copper, brass, iron and steel. H. H. King is interested.

Dominion of Canada

WINNIPEG, MAN.—City, R. H. Webb mayor, is considering construction of a plant for the concentration of manganese ores. Estimated cost, $25,000.

HAMILTON, ONT. — Municipal works committee has approved plans for the erection of a new sewage disposal plant to cost $440,000. Pumping equipment to be installed will cost $183,000. J. D. McBeath is city engineer.

PORT ARTHUR, ONT.—Port Arthur Shipbuilding Co. will build an experimental unit of a new power invention of L. Stanworth, who recently organized the Stanworth Ormerod Power Co., Toronto, Ont.

SCARBORO, ONT. — Interlocking Concrete Pipe Co. Ltd., 105 Victoria street, Toronto, Ont., will start work immediately on the erection of a manufacturing plant on Granger avenue here. W. H. Mackie is president.

TORONTO, ONT. — Pierce-Arrow Motor Car Co., 1695 Elmwood avenue, is considering erection of a branch plant here or elsewhere in Canada.

TORONTO, ONT.—Toronto Mail Device Co. has applied for a building permit for a plant to be built at Eastern & Carlaw avenues at a cost of approximately $5000.

New Trade Publications

AIR TOOLS—Madison-Kipp Corp., Madison, Wis., illustrates in a current bulletin its line of air tools, automatic lubricators and automatic die-casting machines and dies. It is illustrated.

FRICTION CLUTCHES — Carlyle Johnson Machine Co., Manchester, Conn., has issued a bulletin on its friction clutches,. illustrated and with a data sheet to guide in purchasing.

OIL VALVES—Automatic Temperature Control Co. Inc., 34 East Logan street, Philadelphia, has issued Bulletin No. 50 on its oil fuel regulating valves, developed for use with automatic temperature controllers, adapted for manual operation.

PULVERIZED COAL BURNER—Fuller Lehigh Co., 85 Liberty street, New York, in Bulletin No. 905 features its circular burner of turbulent type, for burning pulverized coal. Application, construction and operation are covered.

COLLOIDAL GRAPHITE—Acheson Oildag Co., Port Huron, Mich., in a current bulletin calls attention to the properties, uses and advantages of colloidal graphite as a lubricant. Lubrication theories are discussed and application of the graphite are described. Charts of tests are included.

NICKEL-CLAD STEEL PLATE—A bulletin by the Lukens Steel Co., Coatesville, Pa., describes its recently-developed steel plate covered by a layer of solid pure nickel which is bonded to the steel in the process of hot rolling. Uses for this material are listed and its advantages described.

ELECTRICAL EQUIPMENT—Ryan, Scully & Co., Philadelphia, shows in current bulletins its electric resistors and pot furnaces. In Bulletin No. 6 is described its metallic resistor for industrial heating operations, giving uniform heat dissipation with low upkeep cost. They have been in service for several years. In Bulletin No. 9 an electric pot furnace is described, round or rectangular, designed for close accuracy of heat penetration and elimination of surface scale.

ALLOY STEELS—Subsidiaries of the United States Steel Corp., New York, have issued a bulletin on stainless and heat-resisting steels produced under license of the Chemical Foundation Inc., New York, and Fried. Krupp A. G., Germany. The various grades of steel are presented and typical uses suggested.

COLD-ROLLED STRIP—American Steel & Wire Co., subsidiary of the United States Steel Corp., New York, in Bulletin No. 3 describes its cold-rolled strip steel and shows in text and illustrations the wide application of this material in industry and how widely it is involved in the life of everyone. It forms a manual on this material.

ELECTRIC HOISTS—A new catalog of 48 pages has been issued by Wright Mfg. Co., Bridgeport, Conn. Complete description of Wright electric hoists is included with dimensions and other useful data. The hoists include hook and bolt suspension; plain, geared, and motor-driven trolleys; and drum and low-headroom types.

FOUNDRY LAYOUTS—A novel folder recently issued by Austin Co., Cleveland, contrasts the losing side with the winning side in the effort for foundry profits. The gate to foundry profits is represented as separating the well ordered and equipped foundry from the haphazard, inefficient foundry. Services of the company are recommended.

CASTING ALLOY—Bulletin No. 1 recently issued by Apex Smelting Co., 2554 Fillmore street, Chicago, describes a new, high-strength, corrosion-resisting, aluminum alloy developed by the company. The alloy is recommended for architectural applications, cooking utensils, marine castings, and similar work in sand, die, or permanent mold castings.

ABRASIVE WHEELS — Polishing applications of a cushion abrasive wheel using coated abrasive bands are outlined in an illustrated folder recently issued by C. B. Hunt & Son, Salem, O. The method of attaching the coated abrasive band to the wheel is illustrated and its value in finishing castings and wood or metal patterns is pointed out. Specifications and prices of standard sizes are given.

NICKEL ALLOY STEELS—International Nickel Co., 67 Wall street, New York, has prepared for distribution a booklet on the principal features and service records of the complete Curtiss and Wright lines of airplane engines, with special reference to materials used in their construction. Illustrations show views of various engine models, of important parts and of planes in which they are installed.

CHARGING MACHINE — Bulletin No. 94 of the Wellman Engineering Co., Cleveland, is devoted to description of its open-hearth charging machine. In addition to illustrations of the complete machine in action there are views of parts, showing its rugged construction and diagrams of its layout. The text fully covers description of its details. The machines are all-steel except for current collector shoes.

METALLOGRAPHIC POLISHING MACHINES — American Instrument Co. Inc., 774 Girard street N. W., Washington, has issued a bulletin on its automatic metallographic polishing machine. The device is based on a similar machine developed by the bureau of standards to effect standardization of methods employed in polishing specimens for microscopic examination. The bulletin is illustrated and the machine is fully described.